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ToDiGRA

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Introduction

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The Digital Games Research Association – DiGRA - celebrated its 10th anniversary in 2011. Espen Aarseth declared 2001 as the "year one of computer game studies as an emerging, viable, international, academic field" (Aarseth 2001). As of this writing, the DIGRA conference has been organized five times and DiGRA is now taking the next step, to publish its own journal.

However, for many it is still not clear what Digital Game Studies is. In their book 'Rules of Play' Salen and Zimmerman (2004) proposed the study of games as structures, play activity, and the cultural phenomena. Still, this does not describe how we can or should study games: what questions do we ask and what methods do we use to answer them? The study of games is often described as inter-, multi- and trans-disciplinary. Is this just another way of saying that anything goes? Looking forward, this is perhaps one of the important questions we need to discuss and consider. This is also where our varied backgrounds can be our greatest strength.

How did such a diverse group of scholars come together? Game studies has a clear origin – it grew out playing games and then reflecting on them. We are curious, intrigued, and amazed by games, players, and everything that surrounds them. The typical DiGRA scholar likes to play, has played many games, and uses that experience in formulating his or her central concepts of study.

For the inaugural issue of the DiGRA journal, the editorial board has selected five excellent articles from the DiGRA 2011 conference. The diversity of this selection mirrors that of the field. We can start by looking at approaches and methods. Jason Begy's approach to game

studies is similar to literature studies, in that he discusses how players can attribute metaphorical meaning to a game in a way similar to that of metaphorical reading of a text. He proposes experiential metaphors as a way to understand one particular way of reading highly abstract games. Jonas Linderoth, on the other hand, places a firm foot in ecological psychology to develop a joint model of interactivity in computer games and other forms of games (most notably board games). By contrast, Gareth Schott and Jasper van Vught take an experimental approach to examining the understanding of games that non-game playing parents develop, when their level of game literacy is increased. René Glas proposes a new perspective on our playful identity by observing instances of transgressive play in the pervasive game Foursquare. Finally, Ioanna Iacovides and colleagues are fully committed to developing experimental methods for studying games and their effects on learning and involvement. Although their methods vary, each of these articles reflect the elusive aspect of games: they aim to capture the meaning of games as played.

The variety in methods also extends to the kinds of games studied. The articles span a wide range of games: digital, board games, pervasive, commercial, and experimental. The inclusion and consideration of non-digital games is something that game studies scholars have been calling for a while now. While fairly novel, it is a promising step forward for the field. Digital and non-digital games are similar in some ways but also vastly different: by superimposing and comparing them, we learn more about computer games, and about games more broadly.

We find ourselves in an enviable position. We can look back and see how far we have come in these last years. It is remarkable.

We can also look forward and relish all that we still have left to do. There is no reason to believe that the future will not bring new kinds of games and forms of gaming to study, new ways to study them, and

more importantly, more people interested in joining this scholarly field of research. We are confident that DiGRA will continue to play a fundamental role in this field and, as the inaugural editors of its flagship journal, we are grateful for the opportunity to contribute.

José and Annika
March 6th, 2013

References

Aarseth, E. 2001. "Computer Game Studies, Year One." *Game Studies* 1(1).

Salen, K. and E. Zimmerman. 2004. *Rules of Play: Game Design Fundamentals*. Cambridge, Massachusetts, The MIT Press.

Experiential Metaphors in Abstract Games

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INTRODUCTION

As artifacts, abstract games offer uncommon barriers to criticism. These games often appear to be little more than sets of seemingly arbitrary symbols or shapes that are manipulated or transformed according to equally arbitrary rules, and it can be difficult to see these games as anything but interesting little challenges. Part of this difficulty stems from the fact that these games are not obviously *about* someone or something in the way other media forms—including other games—are. For Ian Bogost (2009), this lack of "aboutness"—meaning whether the game is clearly about an idea, concept, or theme—is a major barrier to interpretation:

> Can we talk about such games the way we talk about, say, *BioShock* or *Pac-Man* or *SimCity*? All of those games offer aboutness of some kind, whether through narrative, characterization, or simulation. In each, there are concrete topics that find representation in the rules and environments. Indeed, it's hard to talk about abstract games precisely because they are not concrete. Those with more identifiably tangible themes offer some entry point for thematic interpretation.

In this paper, I argue that one entry point for interpretation of an abstract game is the experience of playing it, via experiential metaphor (Rusch 2009). After defining "*abstract game*," I discuss the theory behind experiential metaphors and offer two examples of how they can

be used in criticism of abstract games. The goal of this critical method is to provide a new means for game players to construct their own interpretations of a game; the emphasis throughout is on what the player experiences and how it relates to his or her own life.

Here I am using "metaphor" not in the sense of a rhetorical or linguistic flourish, but rather in the cognitive sense as employed by Lakoff and Johnson (1980) and Johnson (1987). Metaphorical projection is the act of applying knowledge or experience from one area of experience to another. Following Lakoff and Johnson (1980), I will refer to the domain that knowledge is taken from as the "source domain" and the domain to which it is applied as the "target domain."

ABSTRACT GAMES

For purposes of this paper, I define *abstract game* as follows: Abstract games are those in which the game objects are not signs in the game's fiction, or, if they are, they operate primarily in the symbolic mode. This definition contains three key elements: game objects, rules and fiction, and Peircean sign modalities. The remainder of this section defines these concepts.

Definition

By *game object* I mean a significant, isolatable entity that influences or modifies other entities within the game. For example, Mario of *Super Mario Bros*. (Nintendo 1985) fame is typically a game object in that he can influence other objects, such as "goombas" (by stomping on them) or coins (by collecting them). Mario's mustache is typically not a game object, nor is the person playing the game; in board games the term refers to the actual pieces being manipulated by the player. Game objects generally fall under Järvinen's (2008) category of "components," though here I intentionally define the term broadly to allow for general discussion of the elements that comprise a game.
The second component of the definition is Juul's theory of game rules

and fiction (2005). Juul defines rules as follows:

> Rules specify *limitations* and *affordances*. They prohibit players from performing actions and this affords players meaningful actions that were not otherwise available; rules give games structure. The board game needs rules that let the players move their pieces as well as preventing them from making illegal moves; the video game needs rules that let the characters move as well as rules that prevent the character from reaching the goal immediately.

Fiction refers to the world in which a game takes place:

> [M]ost video games also project a *fictional world*: The player controls a character; the game takes place in a city, in a jungle, or anywhere else. Such fictional game worlds, obviously, do not actually exist; they are worlds that the game presents and the player imagines (2005).

This distinction is significant, as I will be discussing the roles game objects play within a game's rules and its fiction.

The third component of the definition is Peircean sign modalities. For Peirce, signs are comprised of three elements: the *representamen* (the form the sign takes), the *interpretant* (how the sign is interpreted), and the *object* (that which the sign refers to). Signs operate in three different modes: symbolic, iconic, and indexical. These modes are not mutually exclusive, and any given sign can operate in any combination or number of modes. In the symbolic mode the representamen (or signifier) does not resemble the object; rather, their relationship is "arbitrary or conventional" (Chandler 1997). Symbols "have become associated with their meanings by usage" (Peirce 1998). As examples, Peirce offers "most words, and phrases, and speeches, and books, and libraries" (1998). In the iconic mode the representamen "is perceived

as *resembling* or imitating the [object]" (Chandler 1997). Iconic signs "serve to convey ideas of the things they represent simply by imitating them" (Peirce 1998). Portraits, cartoons, onomatopoeia, and imitative gestures are examples of icons (Chandler 1997). In the third mode, indexical, the representamen is "*not arbitrary*, but is *directly connected* in some way (physically or causally) to the [object]." Indexical signs "show something about things, on account of their being physically connected with them" (Peirce 1998). Examples include "natural signs" such as smoke, thunder, and footprints, as well as measuring devices such as thermometers and clocks" (Chandler 1997).

All signs function within codes, which are "a framework within which signs make sense" (Chandler 1997). For example, we understand the meaning of a written word only if we have access to the relevant code, that is, the language in which the word is written. When game objects are treated as signs, the rules of the game act as one code in which the sign is situated. The following examples assume that the observer understands the relevant codes, which include the rules of the game as well as cultural codes.

Application

Game objects can operate as signs that signify through both the game fiction and the rules. I will use the term *fiction-sign* when considering how the game object operates as a sign in the game's fiction, and *rules-sign* when considering how it operates as a sign in the rules. To demonstrate how this functions, consider a rook taken from a chess set, such as the one in Figure 1.

Figure 1: A rook is a sign in terms of game fiction and game rules.

If the rook is considered as a fiction-sign, the representamen is the rook itself, and the object is a castle, or a tower. This particular sign operates primarily as an icon, as it resembles an actual castle. However, as a rules-sign the rook's primary modality changes. The representamen is still the rook itself, but the object is the set of rules governing the rook's in-game behavior. Because there is no connection between the form of the rook and how it behaves—castles do not typically move—the rules-sign is symbolic. Thus, objects function as signs on both levels. My definition of *abstract game* relies on the modality of objects as fiction-signs. Most other chess pieces are iconic fiction-signs. The knight typically takes the form of a horse, while the bishop features a clerical hat. The queen and king are both depicted wearing crowns, indicating their royal status. The pawn is traditionally the least iconic: taken by itself, it does not seem to represent anything. It is, however, appropriately diminutive compared with the other pieces, and the traditional sphere at the top of the piece can be said to resemble a head. In this instance, knowing the code causes the sign to operate more in the iconic mode. Because the objects are predominantly iconic fiction-signs, chess is not an abstract game.

In contrast, consider the go stones in Figure 2.

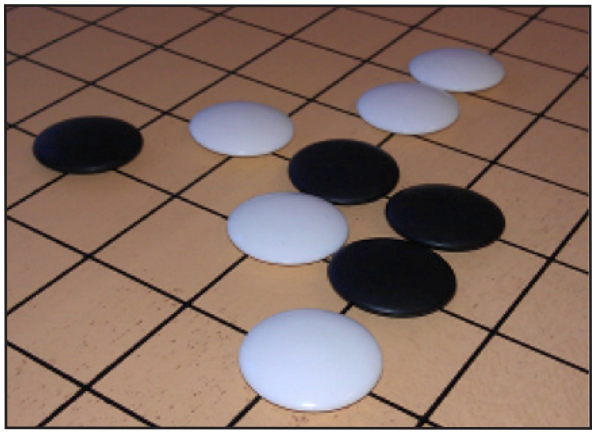

Figure 2: Go stones during a game.

As with the rook, these stones act as rules-signs. The representamen is the stone itself, and the object is the set of rules governing its behavior. Because there is no connection between the form of the sign and the rules, the rules-sign is symbolic. But if the stones are taken as fiction-signs, it becomes apparent that they are not signs at all: they are simply stones that do not represent anything. Thus, go is an abstract game because its objects do not function as fiction-signs.

A third category can be found in Rod Humble's *The Marriage* (2007), shown in Figure 3.

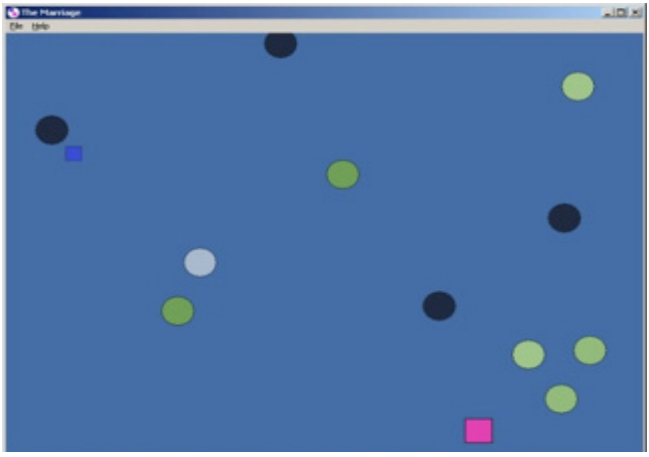

Figure 3: Objects in *The Marriage* are symbolic fiction-signs.

As with the other examples, the objects here operate as symbolic rules-signs: there is no relation between their form and their function. However, these objects do function as fiction-signs as well. According to Rod Humble, the pink square represents the female in the marriage, and the blue square, the male. What differentiates these signs from chess pieces is that they are symbolic fiction-signs: the relationship between their form and what they represent is arbitrary. (Note that while the common use of blue and pink to represent male and female is culturally encoded, it is still arbitrary.) As such, *The Marriage* is an abstract game.

To sum up: chess is not an abstract game because the majority of its objects function as iconic fiction-signs. *The Marriage* is an abstract game because its objects function as *symbolic* fiction-signs, and go is also abstract because its objects do not function as fiction-signs at all.

THE AFFECTIVE DIMENSION

In this paper I am concerned with the experience of playing a game, which I will refer to as its "*affective dimension*." This term refers to the experience of playing a game as shaped by its formal properties. If we ask how it feels to play a game, or how it makes us feel, the question is concerned with the affective dimension. This aspect of games is not well understood, a fact that is not surprising given how difficult it is to describe and pinpoint.

Perhaps the best-known analysis of the affective dimension is provided by the *MDA framework*, a term which stands for Mechanics, Dynamics, Aesthetics (Hunicke et al. 2004). Hunicke et al. define these terms as follows: *Mechanics* "describes the particular components of the game, at the level of data representation and algorithms." *Dynamics* "describes the run-time behavior of the mechanics acting on player inputs and each others' outputs over time." *Aesthetics* essentially refers to what I have labeled the affective dimension, and "describes the desirable emotional responses evoked in the player, when she interacts with the game system." From the designer's perspective, the game mechanics give rise to the system's dynamics, which leads to "particular aesthetic experiences." The player views this process in the opposite direction: "aesthetics set the tone, which is born[e] out in observable dynamics and eventually, operable mechanics" (Hunicke et al. 2004). Within this framework, the aesthetic experience is determined by the game mechanics, and because of this it is possible to design for certain experiences.

The affective dimension is meant to be an open, wide-ranging term describing a general phenomenon that can be analyzed in a variety of ways, not just via MDA. For example, similar work in describing the affective dimension (though not referred to as such) has been done by Aki Järvinen (2009), who has written extensively on how player emotions are connected to in-game goals:

> As we have seen, emotions have to do with planning and goals. So does game play. Games are systems which facilitate "safe" planning towards goals, and thus they also produce various eliciting conditions for emotions. . . . When we are talking about player emotions, we are talking about players' appraisals and actions in relation to goals.

During a game, players experience emotions based on the status of their current goals. Because game goals are part of the game design, it is possible to design a game with the intention of eliciting certain emotions (although whether the player finds said emotions enjoyable is another question altogether). As an example Järvinen (2009) offers *Missile Command* (Atari 1981):

> [T]he player defends six cities from incoming missiles, and has to make conflicting decisions of which cities to protect and which to leave destined for destruction, as the frequency of the missiles increases. The feeling of playing the game is often described as being characterized by panic, as one has to make quick decisions in relation to which component-of-self (a city) to prioritize in protecting, i.e. which parallel goal to abandon and which one to keep on pursuing.

Parallel goals are goals of equal value. In the game, each city is equally important, so the goal of protecting one city is just as important as the goal of protecting any other city. In this example, a primary emotion

felt by players is panic, which results from the fast reactions necessary to play the game, combined with the absence of prioritization: they must react to everything equally quickly and give everything equal priority. This panic is part of the game's affective dimension, which is a result of the game's goal structure, a formal property of the system.

METAPHOR

Before providing examples of how experiential metaphors can work for abstract games criticism, I must first discuss the underlying processes that enable such criticism to function.

In this paper, I will be using *metaphor* in the sense employed by George Lakoff and Mark Johnson (1980). For Johnson (1987), metaphor is "a process by which we understand and structure one domain of experience in terms of another domain *of a different kind*"; metaphor is about understanding one thing in terms of another. In this context, metaphorical projection occurs when the player finds meaning in a game by analyzing how the experience of playing it is similar to another experience, thus enabling a deeper understanding of both. This projection is made possible by structural similarities between the two. While interpretation is an act of the player, and thus cannot be perfectly predicted, it is important to note that the formal properties of the game are essential to this process. Metaphorical projection is not about associating disparate objects or systems at will, but relies on systemic correlations.

Structural Metaphors and Image Schemata

Experiential metaphors belong to a class of metaphor that Lakoff and Johnson (1980) refer to as *structural metaphors*. These metaphors are "grounded in systematic correlations within our experience" and enable us "to use one highly structured and clearly delineated concept to structure another." The emphasis here is on structural similarities between the source and target domains that facilitate our understand-

ing of the target. As an example, Lakoff and Johnson (1980) offer the RATIONAL ARGUMENT IS WAR metaphor, which as a structural metaphor "allows us to conceptualize what a rational argument is in terms of something that we understand more readily, namely, physical conflict." They also show how war and rational argument have structural similarities: both can be won or lost through a series of attacks, counterattacks, and defenses. Both involve intimidation, threats, claiming authority, challenging authority, insults, bargaining, and even flattery. Because of these common elements, we are able to connect war and rational argument via metaphorical projection, and this projection directly influences how we conceptualize rational argument.

Metaphorical projection is made possible by what Johnson (1987) refers to as *image schemata.* These are cognitive structures that organize our experience and comprehension, perhaps best explained through an example. Consider the act of cooking: cooking is a general set of actions, the specifics of which depend on what exactly is being prepared. A person cooking may be using an oven to bake a cake, a microwave to make soup, or a stovetop to prepare eggs. While "cooking" describes a wide range of possible actions and activities, these are all similar enough to fall under the same general term. Cooking, then, is a high-level image schema, and the general nature of the term is important: "cooking" does not automatically mean any one specific thing. In Johnson's (1987) view, image schemata are a fundamental component of our cognitive processes. He writes:

> The view I am proposing is this: in order for us to have meaningful, connected experiences that we can comprehend and reason about, there must be a pattern and order to our actions, perceptions, and conceptions. *A schema is a recurrent pattern, shape, and regularity in, or of, these ongoing ordering activities.* . . . I conceive of them as *structures for organizing* our experience and comprehension.

Image schemata are inherently flexible and dynamic. Because of this, a given schema can be used to structure numerous similar experiences, thus enabling metaphorical projection from one experience to another. As an example, Johnson (1987) offers an analysis of the "from-to" schema. This schema is much simpler than the cooking schema, and thus can structure many disparate experiences, including cooking. This schema consists of three elements: an origin point, a terminal point, and a vector delineating a path from the origin to the terminus. Johnson argues that this schema manifests in numerous events, including: "(a) walking from one place to another, (b) throwing a baseball to your sister, (c) punching your brother, (d) giving your mother a present, (e) the melting of ice into water." Each of these cases involves the "from-to" schema. The last example is metaphorical, as the water does not actually move from one point to another; rather, the origin and terminal points are metaphorically projected onto the origin and terminal states. Structural metaphors involve comparing the structured nature of one experiential domain with that of another via an image schema.

Image schemata are significant for interpreting games metaphorically not only because they make metaphorical projection possible, but because they show how such projection relies on structural similarities between the source and target domains. Understanding one domain in terms of another is not an arbitrary cognitive act, but relies on the relevant image schemata. Image schemata necessarily shape how formal game elements can be interpreted metaphorically.

Experiential Gestalts

Gestalts are a key facet of how image schemata and metaphorical projection function. A *gestalt* is a "complex of properties occurring together [that] is more basic to our experience than their separate occurrence" (Johnson 1980). For example, "jumping" is a gestalt in that we conceive of the activity as a whole, not as the constituent parts that comprise a jump (applying force to the ground, losing contact with the ground

for a period of time, then falling back down and reconnecting with the ground). Breaking down a gestalt as I have just done "will destroy the meaningful unity that makes it the particular gestalt that it is" (Lakoff and Johnson 1987). If, instead of writing "jump," I had listed the various components of jumping, it is unlikely anybody would understand what I was trying to convey; we conceive of gestalts as wholes and are generally unconscious of the constituent parts. As such, the whole is a more basic unit to our understanding than the parts.

In this paper, I am focusing on a particular class of gestalt known as an *experiential gestalt*. An experiential gestalt is a collection of elements or attributes that characterize an experience and allow us to comprehend that experience as a structured whole. Lakoff and Johnson (1980) elaborate:

> Understanding a conversation as being an argument involves being able to superimpose the multidimensional structure of part of the concept WAR upon the corresponding structure CONVERSATION. Such multidimensional structures characterize experiential gestalts, which are ways of organizing experiences into structured wholes. In the ARGUMENT IS WAR metaphor, the gestalt for CONVERSATION is structured further by means of correspondences with selected elements of the gestalt for WAR. Thus one activity, talking, is understood in terms of another, physical fighting. Structuring our experience in terms of such multidimensional gestalts is what makes our experience coherent.

Experiential gestalts combined with image schemata are what allows us to understand one experience as being similar to another. Because experiential gestalts are structured wholes, image schemata enable us to determine when two experiences share a gestalt. This process is key to interpreting a game's affective dimension metaphorically: the gestalt of

playing a game may be similar to that of another experience, a process known as an *experiential metaphor* (Rusch 2009).

Experiential Metaphors

It is possible for the affective dimension of a game to closely align with another, unrelated experiential gestalt. Doris Rusch (2009) has referred to such instances as experiential metaphors, a term referring to "the phenomenon of understanding a gameplay experience as a physical visualization of abstract ideas such as emotional processes or mental states." An experiential metaphor is a structural metaphor wherein both the source and target domains are similar experiential gestalts; Rusch emphasizes the affective aspect of an experience, rather than its structure alone. As an example, she offers a sequence from *God of War II* (SCE Santa Monica 2007) in which the player traverses a chasm via a grappling hook that must be attached to a series of specific points. Rusch (2009) relates the experience of playing this section to that of a transition in one's life:

> By affording the player to enact courage to let go of a safe but unsatisfying status quo in order to move on to a more promising state it evokes associations to a range of similarly structured experiences. The reluctance to let go, the exhilaration of the free fall as a moment ripe with possibilities but without security, the panic that makes one latch back to the starting point, the anguish that comes with the realization that it is too late to go back, to the feeling of triumph and relief when the adventure has come to a successful conclusion—all these elements can also characterize various experiences of transition and change.

Rusch is mapping similar experiences from the source domain (life transitions) to the target domain (*God of War II*'s grappling-hook sequence). It should be noted that the core mechanic in the *God of War II* sequence

enables Rusch's experience: the player must time letting go from one grip point and connecting to the next, risking disaster in between. For Rusch this closely aligns with the transition gestalt, which also is characterized by alternating moments of stability and uncertainty.

METAPHOR AND THE SIMULATION GAP

While the previous section describes how experiential metaphors function, merely identifying two experiences as being similar is insufficient as a critical method. To show how experiential metaphors can function in criticism, I would like to introduce and elaborate on Bogost's (2006, 2007) notion of the "*simulation gap*." The simulation gap is relevant here because it focuses on the relationship between a simulation (which can be a game) and another system, which is similar to the relationship between a game's affective dimension and another experience.

Gonzalo Frasca (2003) defines a *simulation* as follows: "to simulate is to model a (source) system through a different system which maintains (for somebody) some of the behaviors of the original system." By this definition, some games are simulations (*The Marriage*), while some are not (*Tetris*). While I am borrowing Frasca's definition, I would like to include the notion of *communication*: the simulation must communicate to the player that it is based on another system in some manner. This is an essential clarification, as I will be discussing games that were not based on a source system but can be interpreted as being similar to an experience that is otherwise not intentionally related to the game.

As I have noted above, simulations enable a specific method of interpretation known as the simulation gap. The simulation gap describes the space between the simulation, the source system on which the simulation is based, and the user. This gap enables the player to perform a comparative analysis between the game and the system upon which it is based. It also allows the designer to express something about the source system by highlighting or removing certain attributes of the source.

Bogost (2006) has defined a simulation as "the gap between the rule-based representation of a source system and a user's subjectivity" and has further written that "the ontological position of a videogame (or simulation, or procedural system) resides in the gap between the rule-based representation and player subjectivity; I called this space the 'simulation gap'" (2007). I would like to add the source system to this model. (Although it is not stated explicitly, many of Bogost's examples include the source system implicitly). This formulation is shown in Figure 4.

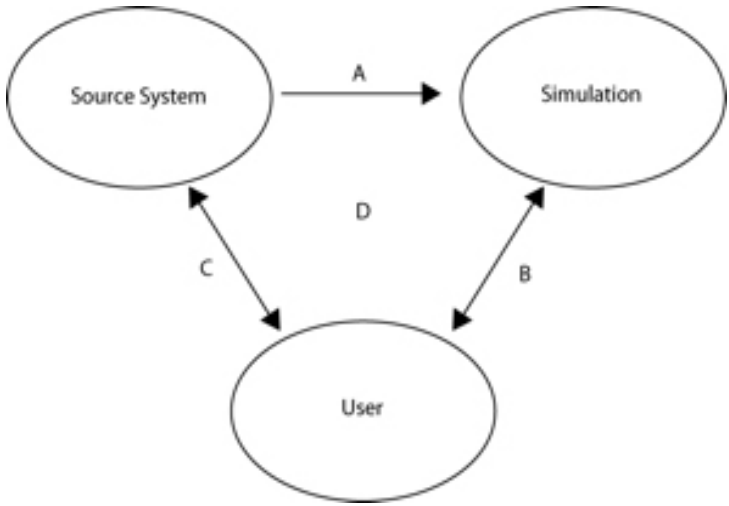

Figure 4: The simulation gap is located at point D, between the source system, simulation, and user.

This diagram models the interplay between the source system, the simulation, and the user. Arrow A represents the abstraction process of creating the simulation based on the source system, which involves selecting the elements of the system to include within—and exclude from—the game. Arrow B represents the user's interaction with the system, while arrow C represents the user's interaction and familiarization with the source system. For example, if we are to play a game such as *SimCity 2000* (Maxis 1993), we are both interacting with the

simulation and comparing it with our knowledge of the source system, i.e., a real city. The simulation gap is located at point D, in the space between the three elements of the system. Through interactiong with the simulation, the player compares the simulation with the source system, focusing on what the simulation has abstracted out and what it has emphasized; this then leads to an interpretation of the simulation. The user's own subjective position is a key element in how the simulation gap facilitates meaning-making: different people will attach different meanings to what the simulation includes and excludes. This also allows the player to develop a deeper understanding of both the simulation and the source system.

Furthermore, I am assuming that the simulation communicates to the player the fact that it is a simulation. This is usually done via the game's fictional elements, but can also occur via paratextual cues such as the game's title, rule book, help files, or explanatory Web sites. While the word "simulation" tends to evoke complexity, for my purposes communication is far more important. Thus a complex game like *SimCity 2000* is a simulation, but so is the relatively simple *September 12th* (Newsgaming.com 2003), Both are based on source systems—a city and the United States government's militaristic response to the events of September 11, 2001, respectively. One can imagine a simulation that is abstract and does not inform the user that it is a simulation. And while such a simulation would still qualify as a simulation, I will not be taking such examples into account because such a game would be difficult to identify as a simulation and thus could not rely on the simulation gap to shape meaning. Under my definition, then, *Tetris* is not a simulation because it does not communicate a source system.

Interpreting a game via metaphorical projection and via the simulation gap involves two similar yet distinct cognitive acts. In the case of a simulation, the player is presumably aware that the game is based on

a source system, and begins playing with the simulation gap already in place. The player is then able to contrast the simulation with the source as play progresses.

Interpreting a game as an experiential metaphor, however, generally occurs in one of two ways. It can result from a reflective process that requires a close analysis of the game's affective dimension, or can occurspontaneously and intuitively during the play of game. The key difference lies in when and how the player connects the game to the outside system or experience. In the case of simulation, the player is given a source system before play even begins, while metaphorical projection occurs during and after play. However, in both instances a player can interpret the game as expressing ideas or making claims about the other system or experience by how it highlights or de-emphasizes its various elements.

I have noted above that the player's comparison of the simulation with the source system can lead to a deeper appreciation of both. Although the initial process is different—the player is not given a source system—experiential and structural metaphors allow the player to compare the game with another experience, system or idea in a manner similar to that of the simulation gap. This is possible because both metaphorical projection and the simulation gap necessarily amplify and diminish various aspects of the system or idea connected to the game. In the case of simulations, the abstraction process involves choosing which elements of the source system to include and which to exclude. Lakoff and Johnson (1980) note that a similar phenomenon occurs when we understand something metaphorically:

> In allowing us to focus on one aspect of a concept (e.g. the battling aspects of arguing), a metaphorical concept can keep us from focusing on other aspects of the concept that are inconsistent with that metaphor. For example, in the midst of

> a heated argument, when we are intent on attacking our opponent's position and defending our own, we may lose sight of the cooperative aspects of arguing.

Thus, understanding a game as a metaphor for something else is very similar to understanding a game as a simulation. In both instances, we are able to find meaning and expression in the differences. To return to Rusch's (2009) *God of War II* example, Rusch notes that failure to swing from one point to the next results in the player's death. While this aspect makes the affective experience more intense, understanding the sequence metaphorically masks the importance of death in the game because it does not correlate with any elements of the transition gestalt.

A CRITICAL METHOD

From these concepts of metaphor and simulation, it is possible to derive a set of methods for the metaphorical interpretation of the affective dimension. Analyzing how an abstract game functions as an experiential metaphor involves the following process: isolating the key elements in the game's experiential gestalt, analyzing how those elements are tied to a common sequence of states within the game, and identifying emotions that arise from those states. From there it is possible to identify a similar, more general experiential gestalt. We can then link the two gestalts through metaphorical projection by mapping elements from the general gestalt (the source domain) to the game's gestalt (the target domain). In this section, I provide two examples of abstract games functioning as experiential metaphors.

Tetris as an Experiential Metaphor

The best-known example of an interpretation of the affective dimension via metaphorical projection is Janet Murray's (1997) interpretation of *Tetris*. As noted above, *Tetris* is an abstract game because its objects—the falling blocks—do not function as signs within the game's fiction; the game has no fiction at all.

> This game is a perfect enactment of the overtasked lives of Americans in the 1990s—of the constant bombardment of tasks that demand our attention and that we must somehow fit into our overcrowded schedules and clear off our desks in order to make room for the next onslaught.

For Murray, the source domain is the "overtasked lives of Americans in the 1990s" and the target domain is Tetris: she is projecting aspects of the source onto the target, thus forming her interpretation.

Scholars and critics have offered numerous responses to this interpretation. Markku Eskelinen (2001) has referred to it as "horrid," because "instead of studying the actual game Murray tries to interpret its supposed content, or better yet, project her favourite content on it; consequently we don't learn anything of the features that make Tetris a game." Eskelinen's reaction is interesting because he seems to be confusing intent: he himself says that she is trying to interpret the game, whereas he is interested in the game's formal properties. Clearly, their goals are different; and one approach does not automatically invalidate the other.

Ian Bogost has reacted more positively to Murray's interpretation, calling it "endearing" (2006) and claiming that it is "entirely reasonable," in that she "offers something essential: evidence from the work itself" (2009). However, he claims that Murray wants the game to "function only narratively" (2009). While I cannot speak to Murray's intentions, as it stands her interpretation of Tetris is metaphorical, not about reading narrative into the game. She is mapping elements from one domain of experience onto another, not arguing that the game tells a story or relates specific events.

However, Bogost (2007) has also criticized Murray's interpretation for

its lack of precision:

> Janet Murray's interpretation of the game as a representation of the unfettered demands of global capitalism would become much more comprehensible to the uninitiated player if she explicitly correlated the game's unit operations with the real world characteristics she has in mind. For example, the constant bombardment of tasks is correlated to the continuous generation of new blocks, and the need to fit unending work into overcrowded schedules and desks correlates with the completed lines which disappear, but only to give way to another onslaught of work.

The correlations Bogost seeks through unit operations are effectively mappings from the source to the target domain. The experience of receiving an endless number of new tasks is metaphorically projected onto the experience of receiving an endless number of new blocks—both of which demand attention. By pushing this type of metaphorical analysis farther, we can see how effective the interpretation is.

From this example it is clear that Murray's interpretation of *Tetris* is as an experiential metaphor, as Rusch (2009) notes. To evaluate Murray's interpretation more closely, we must begin by examining which experiences in the source domain map to which game states in the target domain, a task similar to Bogost's correlations between the game's unit operations and the real-world system. As I have noted, the source domain is the "overtasked lives of Americans in the 1990s" and the target domain is *Tetris*. The source domain is unfortunately vague, but we can infer that Murray specifically means Americans employed in some manner of white-collar occupation, by her references to desks and schedules. The first relevant experience is that of an impending task, which in a white-collar job could be any number of things. In

Tetris this maps to a game state in which a new falling block has just begun descending (the state of the rest of the game does not affect this particular mapping). In both instances there is emotional tension originating in the uncertainty of the outcome, because the quality of the completed task has lasting effects. In *Tetris*, poor block placement will lead to future game states that are difficult to manage, while in the workplace poor performance will have short- and long-term negative effects; in both instances, this leads to anxiety and stress. Finally, the game reaches a state such that a line is cleared, which leads to a brief period of relief that is soon interrupted by the next block. This sequence of states maps to a sequence of experiences characteristic of the source domain: completing a task brings a brief respite, which is inevitably interrupted by a new assignment, which in turn brings back the previous anxiety.

Murray's (1997) reading of *Tetris* is effective in that she has identified how the experiential gestalt of playing the game—the affective structure of the experience that results from the sequence of game states—aligns with the experiential gestalt of white-collar employment. Both gestalts consist primarily of tension, uncertainty of outcome, consequences, and temporary relief. For Murray, the affective dimension of *Tetris* contains a deeper meaning: the game encourages reflection on white-collar employment. It can also be interpreted as expressing frustration with such employment: the inability to "win" at *Tetris* maps to the phrase "dead-end job," meaning an occupation without opportunity to advance.

Tipping Point

Another example of an abstract game that functions as an experiential metaphor is *Tipping Point* (2009), a cooperative board game1 developed by a team of students working in the Singapore-MIT GAMBIT Game Lab; I served as producer and designer on the team. It is a simulation of product development cycles in a corporate environment.

The game is a relevant example because it is an abstract simulation, and can be interpreted as an experiential metaphor of balancing work over a school semester.

The game is based on a simple model of product development derived from the research of Repenning et al. (2001), in which some projects are in "concept development" while others are in "product design and testing." In the game, each player is managing one or more projects, which are represented by the colored crosses in Figure 5. The colored hexagons are a player's production work tokens, and the black circles with white exclamation marks are concept work tokens (no tokens are in play in this figure). Thus the game is abstract: the objects (production and concept tokens) are symbolic fiction-signs.

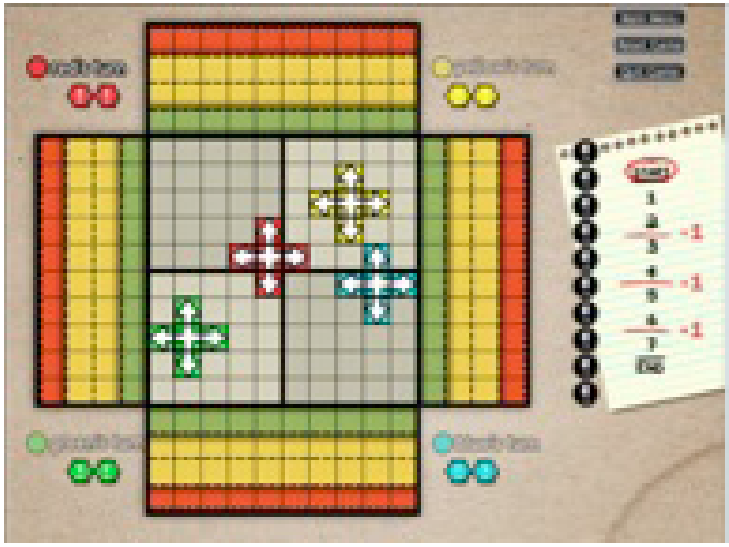

Figure 5: An initial state of *Tipping Point*.

After a player's turn, all of his or her projects grow one square in each orthogonal direction. Players must work together to prevent projects from growing onto the red squares at the edges of the board; failure to do so results in a loss for everyone, not just the owner of the project.

Players complete projects by placing concept and production work tokens to prevent the projects from growing; a project that cannot grow is considered completed. On a player's turn he or she may place both of their production tokens, or one of the concept tokens from the communal pool, on the board. Production tokens stay on the board for only one round, whereas concept tokens remain indefinitely. When a project is completed, its owner must then place a new project, and the group earns one point. The players must earn eight points to win, but after every two points they take on an additional project. This means that at the start of the game only four projects will be on the board at a time, but at the end there will be seven. The increased number makes the game significantly more difficult, as projects that grow into each other combine to form a single project; these compound projects then grow faster and are harder to complete.

The simulation thus emphasizes the balance of concept work and production work. Production work represents last-minute "firefighting" or "crunch" work: while it has a greater short-term benefit than the concept work (because two points may be blocked on a turn instead of one), this benefit disappears on the player's next turn. Concept work's permanence represents the ways that effective planning early in the development process has long-term benefits that last beyond the current project: placing concept tokens always makes the game easier later on, and players will often find themselves in a situation where it is impossible to complete a project without them. The game makes a strong argument in favor of planning; this was a conscious design goal.

While the game design assumes four players, *Tipping Point* is equally playable with fewer, even one. With respect to the solo version of *Tipping Point*, one possible metaphorical interpretation of the affective dimension is as an experiential metaphor for managing coursework over a semester. As I have previously noted, metaphorical projection necessarily amplifies and diminishes various aspects of each domain.

In the case of *Tipping Point*, understanding the game as an experiential metaphor for a school semester amplifies the planning and coordination aspects of managing coursework, and diminshes the nature of the work done on projects. The experience of researching and writing a paper does not map to any element in the game, but scheduling and planning map very closely to *Tipping Point*'s core mechanic: deciding what type of work to do, when to do it, and where to apply it.
In the solo version the player takes the turn of each of the four colors. In metaphorical terms, each color maps to a different class: each has its own assignments that must be completed by different deadlines. In the game, for example, the red project may reach the red zone in four turns, whereas the blue project will reach it in three. While the game's initial state is semi-random (each project begins in a random square of a different quadrant), it is characterized by slight apprehension. In this state the projects are generally far away from their deadlines, but the player is aware that the deadlines will approach very rapidly. This state maps to the experience of looking at syllabi during the first week of class. At that point the semester is not particularly stressful, yet the knowledge that the deadlines are already approaching leads to a similar feeling of apprehension.

Over the first few turns of play, the state changes significantly: projects begin approaching their deadlines, and the player begins placing various work tokens. Concept tokens create game states in which very few projects are blocked, but the short-term disadvantage quickly changes to a long-term advantage as concept tokens assist in finishing multiple projects over time. A state in which the board is heavy on concept tokens maps to the experience of having invested time in general academic work, such as improving one's writing or developing one's research interests. In both cases there is a sense of initial futility, as these efforts have less of a direct impact on the completion of single projects or assignments, but this frustration is gradually replaced by appreciation as the long-term benefits become apparent: as with

concept tokens, this type of work has benefits across several assignments over time. A game state in which numerous production tokens have been placed maps to the experience of having spent time on tasks related to a specific assignment, such as formatting or proofreading a paper. These tasks are necessary to complete the assignment but are not particularly useful elsewhere. Such work can bring some relief, in that it usually means a task is nearing completion, but this relief is accompanied by the sense that the time could have been better spent on more fruitful pursuits.

In *Tipping Point*, and during a semester, completed projects or assignments are immediately replaced by new assignments. This leads to a state in which the new projects are relatively far from their deadlines, which in turn leads to a brief sense of relief: there is now time to place more concept tokens, which will make the game easier later on. Such a state maps to the relief one feels after handing in an assignment and then having time to focus on more general projects, such as reading or attending to nonacademic tasks.

While this is similar to the experience of working on product development for a company, the key difference is in the ramp-up of work and the associated affective experience. Repenning et al. (2001) assume that a given company is always producing two products at once with no ultimate endpoint, whereas *Tipping Point* and a school semester are characterized by the increase in the number of simultaneous projects over a set period time. As the game gets closer to the end, the greater number of projects leads to stronger feelings of tension, apprehension, and panic. The same is true of a semester.

Tipping Point ends with a sort of climactic implosion: the final project is often an enormous, threatening mass that is completed all at once, leaving behind a few smaller projects that must be cleaned up but are no real threat. This sequence of states at the end of the game maps to

the experience of a week of final exams, especially when several are scheduled on the same day. After the most intimidating final papers or tests are completed, assignments of lesser concern often remain. At this point the game/semester is much easier, and the remaining tasks seem almost trivial in comparison with the feats just accomplished. The mappings I have described allow the affective dimension of *Tipping Point* to function as an effective experiential metaphor for progressing through a semester, as both have similar experiential gestalts. Interestingly, the rhetorical point of *Tipping Point* as a simulation—that planning and conceptual work are essential for success—also applies to *Tipping Point* as a metaphor: the key to success in dealing with multiple tasks is effective long-term planning. However, I would argue that the game is more effective as an experiential metaphor than as a simulation, largely because of the ramp-up in work over time that is followed by the sudden cessation of new projects. (This was a design decision intended to make the game more engaging.) The sequence of states that results has more in common with a school semester than with a product-development cycle, which means that the affective experience of playing is closer to the experiential gestalt of a semester as well.

CONCLUSION

As I have shown in the above examples, experiential metaphors provide an effective means of criticism for abstract games. Using this method, it is possible for an interpreter to create meaning out of a game that, on the surface, seems to be lacking any type of expression or meaning beyond the game itself.

I want to emphasize that understanding how to locate meaning in abstract games is of paramount importance to understanding the strengths and potentials of games as an expressive medium. Abstract games are quite possibly the primordial game configuration; only recently have characters and stories become possible. Consequently,

any general theory of how games can express and communicate ideas must be applicable to abstract games. If such a theory is incompatible with abstract games, then it cannot be about games specifically. Furthermore, as Rusch's (2009) example shows, experiential metaphors are equally applicable to more representational games that include rich fictional worlds and characters. Thus, experiential metaphor is an ideal method of criticism, as it is applicable to many different types of games. Lastly, this critical methodology implies a path for design research. If an abstract game is designed such that the affective dimension is an experiential metaphor, and the game provides no clue as to what that metaphor might be, will other players connect the experience as intended? This certainly seems possible, as evidenced by the fact that I am able not only to understand Murray's (1997) metaphorical interpretation of *Tetris*, but also to identify the elements of the source domain and how she has mapped them onto the target domain. This implies that abstract games consciously designed to function as an experiential metaphor can be understood by a broad audience. In this case, metaphor-based game design offers enormous potential for creating games of all kinds that are meaningful and expressive in a novel way.

ACKNOWLEDGMENTS

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ENDNOTES

1. For clarity's sake, when Lakoff and Johnson refer to a metaphysical concept it is printed in capital letters. I have continued this convention for similiar reasons.
2. The game was later implemented in Flash, and is currently playable online at <http://gambiut.mit.edu/loadgame/tippingpoint_digital.php>

REFERENCES

Atari. *Missile Command.*[Atari 2600], Atari, 1981.

Bogost, Ian. *Unit Operations.* Cambridge: MIT Press, 2006.

Bogost, Ian. *Persuasive Games*. Cambridge: MIT Press, 2007.

Bogost, Ian. "Puzzling The Sublime." Gamasutra, Dec. 23, 2009. <http://www.gamasutra.com/view/feature/4225/persuasive_games_ puzzling_the_.php>. Accessed 1/30/09.

Chandler, Daniel. *Semiotics: The Basics*. 2nd edition. Routledge: New York, 2007.

Eskelinen, Markku. "The Gaming Situation." In *Game Studies*, vol 1, issue 1, July 2001. <http://www.gamestudies.org/0101/eskelinen/>.

Frasca, Gonzalo. "Simulation versus Narrative: An Introduction to Ludology." In *The Video Game Theory Reader,* ed. Mark J. P. Wolf and Bernard Perron. New York: Routledge, 2003.

Humble, Rod. *The Marriage.* [Windows PC], 2007. <http://www.rodvik.com/rodgames/marriage.html>.

Hunicke, Robin; LeBlanc, Marc; and Zubke, Robert "MDA: A Formal Approach to Game Design and Game Research." In Proceedings of the AAAI Workshop on Challenges in Game AI, 2004: 04-04. <http://www.cs.northwestern.edu/~hunicke/MDA.pdf>.

Järvinen, Aki. "Games Without Frontiers: Theories and Methods for Game Studies and Design." Ph.D. Thesis, University of Tampere, Finland, 2008. <http://acta.uta.fi/english/teos php?id=11046>.

Järvinen, Aki. "Understanding Video Games as Emotional Experiences." In *The Video Game Theory Reader 2,* ed. Perron and Wolf. New York: Routledge, 2009.

Singapore-MIT GAMBIT Game Lab. *Tipping Point.*[PC] 2009. <http://gambit.mit.edu/loadgame/tippingpoint_digital.php>.

Johnson, Mark. *The Body In The Mind*. Chicago: The University of

Chicago Press, 1987.
Juul, Jesper. *Half-Real*. Cambridge: MIT Press, 2005.
Lakoff, George, and Johnson, Mark. *Metaphors We Live By*. Chicago: The University of Chicago Press, 1980.
Maxis. *SimCity 2000*. [PC], Maxis, 1993.
Murray, Janet. *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*. Cambridge: MIT Press, 1997.
Newsgaming.com. September 12. [PC], Newsgaming.com, 2003. <http://www.newsgaming.com/games/index12.htm>.
Nintendo. *Super Mario Bros*. [Nintendo Entertainment System], Nin tendo, 1985.
Pajitnov, Alexey. *Tetris* [Multiple], 1984.
Peirce, Charles S. *Essential Peirce: Selected Philosophical Writings.* Vol. 2. Ed. Nathan Houser and Christian Kloesel Bloomington: Indiana University Press, 1998.
Repenning, Nelson P., Gonçalves, Paulo, and Black, Laura J. "Past the Tipping Point: The Persistence of Firefighting in Product Devel opment." *California Management Review.* Vol.43, 2001.
Rusch, Doris. "Mechanisms of the Soul: Tackling The Human Condi tion in Videogames." In proceedings of DiGRA 2009, Breaking New Ground: Innovation In Games, Play, Practice, and Theory. London: Brunel University, 2009. <http://www.digra.org/dl/display_html?chid=http://www.digra.org/dl/db/09287.01371.pdf>.
SCE Santa Monica. *God of War II*. [Playstation 2], SCEA, 2007.

Breaking Reality: Exploring Pervasive Cheating in Foursquare

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INTRODUCTION

"♫ This ain't Seaworld, this is as real as it gets
I'm on a boat, MF'er, don't you ever forget! ♫"
—"I'm on a Boat!," The Lonely Island (2009)

These song lyrics accompanied a badge I earned in February 2010 while using *Foursquare* on my mobile phone. This location-based social-network service, created by Dennis Crowley and Naveen Selvadurai and launched in 2009, offers its users opportunities to check in at real-world venues, earning rewards such as badges in the process. The badge I was awarded, appropriately titled "I'm on a Boat!," is the reward for the first time one actually checks in on a boat in real life.

The problem, however, is that I never actually was on a boat. I checked in at Amsterdam Central Station to take the train to work. *Foursquare*'s virtual venues are supposed to be linked directly to real venues, but Central Station was *virtually* changed into something else. Amsterdam Central Station "ain't Seaworld," to quote The Lonely Island, but for *Foursquare* users, it suddenly was also no longer "as real as it gets." And in case I would "ever forget," *Foursquare* had automatically posted the fact that I had earned the badge on my Facebook wall, triggering friends to question not only my real location, but also my sincerity: "Have you started cheating?"

After a short investigation, I found out what had happened. As a service dependent on user participation, *Foursquare* invites its users not only to add new venues to the database, but also to describe what these venues are, or what one can find there, through a system of tags. Many different tags are possible, but only certain ones are linked to badge rewards. The person responsible for the "I'm on a Boat!" badge had to know this; he or she had apparently added the tag "boat" to the station. By doing so, this person not only cheated the system, but included me—and everyone else checking in before the tag was removed—in this devious act.

This paper deals with the notion of cheating in the location-based mobile social-networking application *Foursquare*. It addresses the question of whether and how practices like the one described above impact the boundaries between play and reality as negotiated spaces of interaction. Having actively participated in using *Foursquare* and observed its development for over a year, I will use this application as my main case study. *Foursquare*, with its millions of users, is, furthermore, a prime example of what has become known as *gamification*, a phenomenon which stretches the notion of what constitutes a game. To investigate the conceptual boundaries of play, I will start by elucidating what the gamification phenomenon entails. I will then move on to frame *Foursquare* as a pervasive game and, subsequently, cheating in *Foursquare* as pervasive cheating. Finally, an investigation of the various stakeholders involved in and around *Foursquare* will show how pervasive cheating impacts both play and use of the application. This allows me to focus on the pervasive nature of *Foursquare,* which is central to my argument that cheating in these types of location-based mobile media results in shifts in control and agency over play, as well as potential shifts in identity for both players and users.

THE MATTER OF GAMIFICATION

The term *gamification* is a true industry buzzword, often used to refer

to applications with gamelike characteristics. As game designer Jesse Schell put it during one of many gamification conference panels, gamification is "taking things that aren't games and trying to make them feel more like games" (quoted in Graft, 2011). In an effort to show that gamification does, however, demarcate a distinct group of phenomena, Sebastian Deterding, Dan Dixon, Rilla Khaled, and Lennart Necke describe it as "use of game design elements in non-game contexts" (2011, p. 2). Gamified media, then, are not games but media which are designed to offer a certain level of "gamefulness" which depicts the experiential qualities of gaming. These qualities, they argue, make gamefulness distinct from playfulness in a sense that they are about "rule-bound, goal-oriented play" rather than "open, exploratory, free-form play" (20122, p. 3).

When it comes to non-game contexts, Deterding et al. do not explicitly link gamification to "specific usage intentions, contexts, or media of implementation" (2011, p. 5). In practice, however, the goal of gamification is to make applications and online services more like games, and therefore more engaging for the user—i.e.,the consumer.

As an industry term, gamification is in danger of following the path of "interactivity," which, as game scholar Espen Aarseth has noted, became a form of industry rhetoric implying that "the role of the consumer had (or would very soon) change (sic) for the better" (1997, p. 48). The way in which gamification is promoted as a revolutionary push towards making both old and new media more engaging for its users sound very similar. Take, for instance, this statement about *Foursquare* in game designer Jane McGonigal's *Reality Is Broken*:

> What makes a *Foursquare* social life better than your regular social life is the simple fact that to do well in *Foursquare*, you have to enjoy yourself more. You have to frequent your favorite places more often, try things you've never tried before, go

> places you've never been, and meet up more often with friends whom you might not ordinarily make time to see in person. In other words, it's not a game that rewards you for what you're already doing. It's a game that rewards you for doing new things, and making a better effort to be social (McGonigal, 2011, p. 166).

While McGonigal calls *Foursquare* a "good game" (2011, p. 167), gamification's detractors would argue that an app like *Foursquare* is hardly a game at all. It is a borderline case at best when viewed through classic definitions of the word game (see Salen and Zimmerman, 2004; Juul, 2005), and some argue that apps such as Foursquare consist mostly (or only) of feedback systems, without any game mechanics (Deterding, 2010; Bogost, 2011). Feedback systems, like points or badges, are seldom part of game-play; they usually communicate the results of game-play. As game designer and critic Margaret Robertson argues: "What we're currently terming gamification is in fact the process of taking *the thing that is least essential to games* and representing it as the core of the experience" (Robertson, 2010; emphasis in original). She proposes the alternative term *pointsification* to describe the phenomenon, adding that while the implementation of gamelike reward systems in media is not bad per se, it has the potential to strip out the sense of agency and competence so important for game-play (Robertson, 2010).

It should also be said that the team behind *Foursquare* does not consider it to be a game—on the official website, it is referred to as a "location-based mobile platform" (*Foursquare*, 2011). The fact that the creators sometimes have trouble addressing the exact nature of this platform becomes clear in a statement by *Foursquare*'s head of product, Alex Rainert. In an interview, he stated that they "don't consider *Foursquare* a game," adding that they do "recognize the value of using game mechanics to change behaviors" (van Buskirk, 2011), seemingly

supporting and criticizing the various opinions on *Foursquare*'s status as a game.

While the above discussion is certainly interesting, it is not my goal in this article to untangle the different, sometimes conflicting views on gamification or to argue for or against the phenomenon. Rather, I want to explore play practices that emerge from the increased implementation of gamelike characteristics in location-based mobile media. In their overview of current uses of the term, Deterding et al. point to another industry use of gamification, the "increasing adoption, institutionalization and ubiquity of (video) games in everyday life" (2011, pp. 1–2). This characterization of gamification can be seen as part of a larger process of *ludification* of culture that can be traced back to the 1960s (e.g. Stenros et al., 2009; Frissen et al., 2010). With games and play increasingly pervading mainstream culture, the gamification phenomenon only adds to the articulation of the playful dimensions of our individual and cultural identity.

Critics might lament that gamification substitutes game-play for mere feedback systems; for some players, however, playing the feedback system is the core of the experience. For these players, the "new things" they undertake through *Foursquare* might not involve getting out more or being more social, as McGonigal attests in her work. Instead, these new things could involve finding out new ways to not leave the house at all, or being rather antisocial, while still receiving the same rewards as those who play "by the rules." Such players, who play not by, but rather against, the rules, are usually referred to as cheaters.

According to the *Foursquare* FAQ, cheating is not a "widespread" phenomenon within the service (*Foursquare*, 2010). Many instances of cheating are subtle and often indirect, invoking at most annoyance in other users. I need to point out, however, that instances of cheating do bring with them new questions about identity formation in a ludified

culture (Raessens 2006, Frissen et al., 2010, Frissen et al., forthcoming), as well as concerns about how cheating practices influence the relationship between play and nonplay (i.e., regular use) in location-based mobile applications like *Foursquare*. If we want to explore the notion of cheating in these media, we need to first acknowledge that cheating, both as a practice and as a term describing such practices, is rather hard to define. To understand the volatile nature of cheating, one should first look at the boundaries of play.

FRAMING THE *FOURSQUARE* EXPERIENCE

Cheating covers a host of deviant, devious, antisocial and/or unsportsmanlike practices which break the metaphorical "magic circle" that separates the activity of play from the outside world—a term originating from Johan Huizinga's *Homo Ludens* (1938; reprinted 1955). This magic circle supposedly defines the boundaries of play. The concept is that breaking the magic circle, as happens in some forms of cheating, results in play being suspended momentarily or indefinitely by the players and/or referee. The magic circle has been the subject of much discussion within game studies since the early 2000s.

The consensus seems to be that the magic circle, if such a boundary exists, never really excludes the outside world. It is framed as an "imperfect separation that players negotiate and uphold" (Juul, 2008, 62); as a "ritualistic and contractual boundary" based on a "somewhat implicit agreement" (Montola, 2009, 10); or as nonexistent, as ordinary life always pervades play (Pargman and Jakobsson, 2008; Consalvo, 2009). Goffman's discussion of *frame analysis*, as embraced by sociologist Gary Alan Fine in his classic ethnographic study of tabletop fantasy gaming (Goffman, 1974; Fine, 1983), has become a popular alternative to the concept of the magic circle (e.g., Jørgensen et al., 2011). Rather than dealing with a somewhat formalist notion of boundaries between the play world and the real world, frame analysis looks at different levels of engrossment that players experience when

engaging a game. Players organize these experiences through frames of meaning. While the types of frames which can form during play are endless, Fine focuses on three main frames: the primary frame of the real world, grounding all activities; the game context with its rules and structures; and the fictional world presented within the game, in which players are present as characters (1983, pp. 183–86).

The concept of frames is helpful for dealing with gamified media like *Foursquare*, as it leaves more room for games which, like the role-playing games Fine studied, deviate from classic game models. As a location-based social-network application, *Foursquare* can be considered a pervasive game, a type of game with one or more salient features that expand the spatial, temporal, or social boundaries of play (Montola, 2009, p. 12). *Foursquare* exhibits all three forms of boundary expansion. First, it uses the real world as its playground and, as such, does not feature a fictional game world in which players create characters. While the explicit link with the real world does not prevent players from creating fictional characters[1], in theory, players "play" with hemselves. Second, although there are weekly rankings of top users, the game is persistent, rather than divided into separate play sessions. Third, when it comes to play *Foursquare* features a large number of nonparticipants among its users, expanding the game beyond the core players.

The concept of having nonparticipants among *Foursquare*'s users may need some elaboration. Playing *Foursquare* does not seem to involve any bystanders, at least not in the way many pervasive games use them as audience, challenge, or obstacle (Montola et al., 2009). There are,

1 Some *Foursquare* users do create fictional characters, often meant for humorous purposes. One cheater claimed to have created, among others, a fake Martha Stewart checking into dollar stores and pawnshops, a fake Tommy Chong whom he made mayor of 120 cannabis clinics, and a "random nerd" who likes to check in at large Silicon Valley campuses (Krazydad, 2010).

however, nonparticipants in play who are nevertheless active within *Foursquare* itself. Although it might be considered a pervasive game because of its gamified nature, for many users, it remains mainly a location-based social-network application. As Frissen, De Mul, and Raessens point out, "A playful affordance is . . . 'virtual' (in the sense of a potentiality) until it is actualized by the playful attitude of the user and experienced as such" (2010, 8). Not all *Foursquare* users engage with the service with such an attitude, and for them, it might never feel like a game. Because these users are aware of the playful affordance of *Foursquare* (they, too, receive points and badges when checking in), they are not "unaware participants" (Montola, 2009, p. 16), but rather *aware nonparticipants* in play.

The line between being a player and being a user is, of course, thin. As Deterding et al. point out, it is a boundary that is "empirical, subjective and social: whether you and your friends 'play' or 'use' *Foursquare* depends on your (negotiated) focus, perceptions and enactments"; they add that "the addition of one informal rule or shared goal by a group of users may turn a 'merely' "gamified" application into a 'full' game" (2011, p. 3). From a frame-analysis perspective, however, players and users approach *Foursquare* from noticeably different frames. As Fine points out, every frame has meanings associated with it, and "these meanings are not necessarily shared with figures (persons, players, characters) operating in other frames" (1983, p. 187). The regular users' experience of *Foursquare*, for the most part, remains in the primary frame of the real world, which makes them less sensitive to issues which matter to players who are engaged in the game from a ludic frame.

PERVASIVE CHEATING

The dual experience of *Foursquare* as a game and as a location-based social app—manifested through the presence or absence of a playful attitude—is not usually thought of as problematic by either players or

other users. Players, for instance, benefit from other users' involvement in adding and editing locations for the game, expanding their playground. Conversely, users can see their experience enhanced by players who never miss a check-in anywhere they go, making *Foursquare* feel alive as a social service. The exposure to one another's attitudes and practices mostly remains indirect. Players who *cheat*, however, not only potentially break the metaphorical magic circle of other players; they also directly expose nonplayers to their antics, potentially breaking or at least influencing *their* user experience as well. Montola states that "Pervasive games can take the pleasure of the game to ordinary life" (2009, p. 21). Cheating in pervasive games, or *pervasive cheating*, as I will show below, can pull ordinary life into a game—whether nonplayers want this to happen or not.

As an application heavily dependent on user-generated content and honest behavior when it comes to check-ins, *Foursquare* offers ample opportunity for cheating practices. As a result, cheating practices vary greatly in form and (perceived) severity. Cheating practices are not limited to breaking the boundaries of play that result from the social negotiation processes discussed above. The socially negotiated rules could be called "soft rules"; in digital games, however, there are also "hard rules," which are presented through the actual game code (Consalvo, 2007, p. 87). Additionally, everyone using a service such as *Foursquare* agrees to obey certain contractual rules put forward in the Terms of Use. Cheating in digital games, therefore, is sociotechnical in nature, with the rules and boundaries of play both set and contested on the levels of play, game design, game contracts, and game culture (Kücklich, 2008; De Paoli and Kerr, 2009; Glas, 2012). With pervasive cheating, the act and the effects of cheating are further complicated by the differing frames of engrossment through which players and users approach *Foursquare.* While I will forgo the effort to categorize cheating practices, I will explore different forms of cheating to show how they affect the various parties involved in creating, playing, and

using *Foursquare*, and I will show how these parties all have different stakes in pursuing and contesting pervasive cheating.

THE STAKES IN *FOURSQUARE*

All parties with certain interests in a game can be considered stakeholders. In the case of *Foursquare*, these parties include the aforementioned players and users, but also its makers and the other companies and businesses associated with the game. Whether their interests are commercial or affective in nature, stakeholders usually strive to achieve what they think is in the game's or their own best interest. Cheaters are no exception: while their practices might be deemed deviant or even devious, many of them see their activities as highly pleasurable. They, too, can be seen as stakeholders. In the following sections, I will seek to describe how *Foursquare*'s stakeholders are affected by and deal with cheating in different ways. Exposing various negotiations between these stakeholders about the rules of play provides valuable insight into the ways cheating influences the pervasive nature of play in gamified media.

The Players

According to Salen and Zimmerman, there is a hypothetical "standard" and honest game player, who plays a game as it was designed to be played. This player type forms the "test case against which all other types of players are contrasted" as he or she is the most "law-abiding citizen" when it comes to following the (hard) rules (2004, pp. 268–269). The other types they mention (the dedicated player, the unsportsmanlike player, the cheat, and the spoilsport) all deviate in various ways from the rules of play—by finding ways around them, breaking them, or ignoring them altogether. The standard player, however, is an idealized player, at least from the viewpoint of most game designers. While Salen and Zimmerman rightfully point out that such an ideal player might not exist, the idea itself provides a "backdrop against which less rule-governed styles of play can be understood" (2004, p. 269).

And indeed, while most *Foursquare* players would probably consider themselves standard players, many do bend the rules. The idea behind checking in at venues, for instance, is that you do so only when you are actually there. Many players, however, check in beforehand (to show friends that they are on their way) and/or retroactively (in case they have forgotten a check-in). One reason for this is that the app tracks and keeps all of one's check-in data, making it available on the website for oneself and, if desired, others. Many players (and regular users) would like this list to be as complete as possible. While not complying with the basic check-in rules, these practices are generally considered acceptable behavior; this would suggest that what defines a standard player not only depends on the way a game is designed, but also is influenced by the rules created and negotiated socially. In a blog post on cheating practices, the *Foursquare* design team indicates that it is well aware of these socially accepted rules: "We're fine with pre-check-ins and post-check-ins. . . . (Trust us, we do it too to fill out our history pages!)" (Team *Foursquare*, 2010).

While check-in etiquette might be lenient toward pre- and post-check-in practices, standard players see honesty about checking-in as key to the *Foursquare* play experience. According to some disgruntled players, the first year after *Foursquare*'s launch in March 2009 saw rampant dishonest check-ins. During this period, it was easy to check in at any location from anywhere. This situation forced *Foursquare* to implement "cheater code" (discussed below), but also triggered players to vent their dissatisfaction through social media like Twitter and blogs.

The players' ire was provoked particularly by people using dishonest check-ins to become mayors of venues. Becoming mayor through standard play requires consecutive visits to places, and only the person who has visited a given place the most times is crowned mayor. Places such as train stations and coffeehouses are therefore hot spots for *Foursquare* players who are trying to oust each other as mayor. In terms of

time investment, being a mayor of such a hot spot has high value for players, and one can imagine the general frustration if someone who has never been there suddenly grabs the mayorship.[2] When the stakes are high for players who are abiding by the rules of play in gamified media, cheating can feel just as destructive as it does in classic games.

The Cheaters

Why players cheat or deviate in other ways from the rules (social and/or coded) is difficult to address. As game scholar Mia Consalvo points out after having conducted countless interviews on why players cheat, "Perhaps the only constant is the lack of a constant factor" (2007, p. 94). In the case of the "I'm on a Boat!" badge, the person responsible might just have wanted to have the badge without going to the trouble of actually getting on a boat. Maybe adding the "#boat" tag was just an act of stretching the truth a bit, since right behind the station there is actually a waterfront area with ferries. Maybe he or she wanted to annoy -or please- other *Foursquare* users by forcing the badge upon them. Maybe he or she just wanted to show how easy it is to trick the system.

While the reasons behind deviant behavior in games may vary, an overarching theme in the way players generally talk about cheating in games is that it provides an unfair advantage over those who play by the rules (Consalvo, 2007, p. 87). In a game like *Foursquare*, which hardly has any quantifiable outcomes that could be deemed a winning scenario, this idea of what constitutes an advantage might sound exaggerated. With the exception of deviously achieving a mayorship, which might directly affect players striving for this position in the standard

2 As *Foursquare* was one of the first big gamification phenomena early 2010, the frustration about cheating practices during battles for mayorships even entered pop culture. Popular webcomic *Player* vs *Player*, for instance, dedicated a story arc to it (Kurtz 2010), and it even spawned an online video series called *Foursquare Cops* (Tondorf 2010).

way, in most cases cheating in *Foursquare* affects other players only indirectly, lessening the impact of cheating considerably. This suggests that cheating in a game like *Foursquare* functions mostly to annoy other players. Some cheaters have, however, seen larger stakes in the way they play—and cheat in—the game.

An interesting case to illustrate this point is that of a group of cheaters in Indonesia. In 2010, many players made complaints about this group. These users, whose online profile made it clear they were in fact located in Indonesia, managed to amass almost all possible badges with thousands of check-ins all over the world. The badges include those tied to very specific locations and/or very specific events or times. Examples include a badge for having voted in a U.S. midterm election on Election Day; one for having participated in political comedian Stephen Colbert's "March to Keep Fear Alive" event in Washington, D.C.; and a Banksy Badge, which one could earn only by checking in at select movie theatres playing the street art documentary *Exit Through the Gift Shop* and, while being there, mentioning its director Banksy in a "shoutout" (one of the ways *Foursquare* allows players to alert others to their presence). To acquire their large numbers of badges and other rewards, these players had managed to check in from one place to another (including locations in different countries) faster than realistically possible, a deviant practice called "jumping." Many of the Indonesian jumpers were to be found in the top *Foursquare* user lists (and still were there at the time of this writing, early 2011).

According to one Indonesian blogger, this trend among Indonesian *Foursquare* users can be seen as a continuation of their use of social-network sites as a form of popularity contest, with the goal of getting as many "friends" as possible into their network, by whatever means, and regardless whether they actually know these people ("mia1984," 2010). In this blogger's view—and that of many other players—these users just don't understand how services like Facebook

and *Foursquare* work (i.e., what the rules of play are). However, as cultural anthropologist Michiel de Lange points out in his study of mobile-media practices in Indonesia, cultural context is important. In Indonesia, "Being able to play with, and subvert pre-programmed rules is considered a valuable asset" in view of people's experience of having lived under the strict laws/rules of Suharto's regime (2010, p. 193). Subversion is seen not only as fun, but as a source of prestige among peers. In other words, for these cheaters, the stakes are such that they consider their behavior not deviant, but status-enhancing.

Other Users

As noted above, the distinction between players and other users, or aware nonparticipants, of *Foursquare* can be difficult to make. However, one can argue that when users are the direct or indirect victims of cheating practices, the effect on them is somewhat different from the effect on players. Cheating, for players, means that the metaphorical magic circle of play becomes unstable, transporting them back from the play world to the real world. To use Goffmanian terms (1974), the game is temporally *downkeyed* from the ludic frame to the primary frame. For a user who is normally not really concerned with the ludic frame, cheating practices can cause a reverse frame switch, where the game is not downkeyed but, instead, reality is *upkeyed* to a ludic level.

The "I'm on a Boat!" anecdote can serve as a useful example of frame switching for the purpose of analysis. The fact that Amsterdam Central Station was turned into a "boat" within *Foursquare*'s venue database confronted users with the ludic frame, diffusing the service's supposed link to the real world. Furthermore, the unfair advantage of getting the badge was distributed to both players and users *without their consent*, making them involuntary and potentially unwilling "accomplices." While I consider myself a participant who engaged with *Foursquare* with a playful attitude—engaging it within a ludic frame—many nonplayers also were affected by the devious action that had

taken place. When they suddenly got the badge that day during their routine check-in, they were turned into cheaters, an identity that is mainly linked to the ludic frame of the game rather than the primary frame of the real world.

Cheaters therefore not only focus nonplayers' attention on various deviant uses of *Foursquare*, but can actually pull aware nonparticipants into reluctant (or willing) participation in play. As frames are shifted as a result of cheating practices, we can observe that while cheating may break a game for the players, it can simultaneously break reality for all others.

While it can be argued that a playful attitude is always voluntary and therefore cannot be forced upon a user by a cheater, the same cannot be said about the user's identity. Even when people using *Foursquare* consider themselves nonplayers, their user profile still shows the points, badges, and mayorships they have earned by using the service. If maintaining social-network profiles functions is a way to write one's (virtual) identity into being (Boyd, 2007, pp. 13–15), and if we follow the notion of a ludification of culture, we can argue that maintaining profiles like *Foursquare*'s attribute to what can be considered *playing* one's identity into being. If cheaters interfere with these profiles, identity construction and/or proliferation of players and users alike are affected.

The Designers

The design team behind *Foursquare* is well aware of cheating practices and the potential annoyance or even grief they can cause to both players and nonplayers. They have implemented barriers against practices they identify as cheating. On the level of game contract, for instance, they warn users against taking any improper action, or contributing any content which "you know is false, misleading, untruthful or inaccurate" (from the Terms of Use, *Foursquare*, 2011). The game contracts, which all users agree to when they create their account, allow

the design team to block or even cancel accounts. On a technical level, there is the aforementioned "cheater code" to prevent location cheating. While *Foursquare*'s design team keeps details about its anti-cheating techniques deliberately sketchy, an investigative study has shown that they involve using a phone's GPS for verifying locations and for monitoring check-in frequency at single venues, distance between different check-in venues, and rapid-fire check-ins in multiple venues in one location (He et al., 2011).

While the measures mentioned above sound tough, checking in while not actually physically being at a venue still remains possible. The catch is that the potential to unlock rewards (mayorships, points, badges) is blocked during false check-ins. Technical loopholes for reaching these rewards still exist, as shown by the Indonesian jumpers, who mostly check in through mobile web browsers (an option developed as an alternative for users without GPS-enabled phones). While checking in through mobile web browsers does allow users to earn badges and use many of *Foursquare*'s other social-networking functionalities, it does not allow check-ins to count for mayorships. This design feature prevents users without access to modern smartphone hardware and data plans from becoming mayors, but, at the same time, it does not stop those willing to cheat from exploiting the potential for earning badges deviously.[3]

Foursquare's design team makes no secret of the need for balancing issues like these. Commenting on a well-known cheater's blog post, the company's co-founder Dennis Crowley asks:

> What's more valuable—a system in which everyone can play & participate? Or a system that places emphasis on the valid-

3 This situation has, furthermore, prompted the design team to implement a system in which players suspected of cheating practices are flagged. When deemed guilty, they will have their accounts blocked from earning any rewards.

> ity of each check-in/post at the expense of all-inclusiveness? I think the thing that makes foursquare [sic] so interesting—and yet so difficult—is that it wants to be both things at the same time. And if you survey users, just as many use it for finding their friends as they do for trying to get points/badges/mayorships" (Crowley, in a comment on Krazydad, 2010).

What these remarks suggest is that *Foursquare* is designed to appease both players and users existing within different frames of engrossment. Cheaters, on the other hand, constantly raise the stakes for the designers, prompting them to act against them to keep the playful spirit of Foursquare alive while preventing other users from leaving in frustration at overly strict check-in systems. Keeping both players and other users on board is important, as the service's business model depends on it; this brings us to the final stakeholder group to be discussed here.

Businesses

As *Foursquare* is a free service for its users, its business model depends on other means of income. Primary sources of income are marketing partnerships, with various brands using the service to reach the social-media crowd. *Foursquare*'s reward system is comparable to loyalty programs like airlines' frequent-flyer systems, rewarding repeat customers in a similar fashion (Bogost, 2010). Interested parties can tap into this loyalty by offering promotional, brand-unique badges. For venue owners, a free set of tools is available to setup "Specials" for regular customers or mayors. These forms of in-game marketing, in which both *Foursquare* and participating businesses have not affective, but commercial, stakes, can be derailed by cheating practices.

Specials are especially sensitive to exploitation. Promoting a Special, like free drinks in a bar for the mayor, invites potentially dishonest check-in behavior. This in turn might put off honest players—potential customers for a business. To protect *their* customers against

situations like this, in late 2010, *Foursquare* began offering businesses the possibility of ousting mayors from their venues if they have reason to believe a mayorship was not gained through legitimate means.[4] Although understandable from a commercial perspective, decisions like these make businesses, rather than game makers or players, into arbiters of the rules of play.

While the experience of players and nonplayer users, as well as the content they generate, matters greatly to the design team, we should not underestimate external business partners, whether they are big brands buying their own badges or small companies using the free Specials tool. They are increasingly becoming key stakeholders, forming a source of (potential) revenue and fueling the growth of gamified media like *Foursquare*, but also acting as participants in the realm of play. Whether and how these commercial parties use (and potentially misuse) their agency over the rules of play is beyond the scope of this article, but this unquestionably shines new light on the ways the boundaries of play are negotiated in gamified media and culture.

CONCLUSION

In their discussion of pervasive games in media culture, game researchers Jaakko Stenros, Markus Montola, and Frans Mäyrä have pointed out that having a clear distinction between serious and playful mindsets and contexts is not sufficient to cover all pervasive play forms. They argue that it "omits the constantly growing phenomena of fabrication and pretense, which exist in the gray borders of playfulness" (2009, p. 271). Both fabrication and pretense result in situations in which one party is oblivious to playful intentions while the other is not. This paper has been an effort to address another such grey area of pervasive games, cheating, in which all parties are aware of the pres-

4 Additionally, business can assign employees and managers for their venues (in effect preventing these users from collecting rewards) and display check-in codes on screens which players need to type in for validation.

ence of playful potential, but deviant practices challenge the boundaries between play and ordinary life. To this purpose, I first discussed the status of these boundaries in gamified media and pervasive games, concluding that cheating adds further complexity to the already blurred distinction between play and nonplay inherent in these forms of games. By exploring various forms of cheating as well as the ways different stakeholders influence and are influenced by these practices, I have shown that cheating can be much more than just a nuisance. In a way similar to fabrication and pretense, where an "asymmetry in information also creates an asymmetry in power and control" (Stenros et al., 2009, p. 273), cheaters can create situations in which other stakeholders' agency over gamified media like *Foursquare*—and, as a consequence, their own identity—is at stake.

Games scholar Julian Kücklich reminds us that the study of cheating "foregrounds the fact that games are embedded into a larger social and cultural context with undeniable links to the world we inhabit" (2008, p. 69). With the phenomenon of gamification on the rise in our culture, we will most certainly see an increase in the quantity and variety of pervasive cheating practices. For this reason, we need further research to explore the concept of cheating in relation to the increasingly prominent role of the ludic in our culture.

There are, however, additional areas for research into the notion of pervasive cheating. Kücklich, for instance, points out that cheating in massively multiplayer online role-playing games (or MMORPGs) is of special interest, since

> These [games] are novel participatory media forms that are infused with cultural codes from the real world such as the flow of currency and commodities. Insofar as the characters themselves become a commodity in MMORPGs, cheats that address this commodification can be said to possess critical

potential (Kücklich, 2008, p. 69).

Like MMORPGs, gamified media like *Foursquare* are novel participatory media forms too, and here cheating has critical potential as well. Take, for instance, Bogost's argument that gamification, or *exploitationware*, as he suggests calling it, perverts the traditional two-way relationship between institutions and customers. In his view, "Organizations ask for loyalty, but they reciprocate that loyalty with shams, counterfeit incentives that neither provide value nor require investment" (2011, p. 4). From this perspective, we should explore whether and how pervasive cheating practices that highlight the futility of gamification's reward systems have the potential to make players aware of such asymmetrical relationships.

The link between cheating and critique is not limited, however, to exposing the business models behind the gamification phenomenon. Players themselves find other creative uses for manipulating the rules of play. I have, for instance, come across a *Foursquare* venue which, translated from Dutch, was named "Hangout for idlers, potential criminals, and people who've lost their way" and was tagged with terms like "#freeloaders," "#homeless," and "#dangerous." Additionally, someone used *Foursquare*'s "tips" option (usually reserved for positive feedback about a venue) to point out how the local government had failed to stop the deterioration of the building in question—as it turned out, an old, derelict high school building. Entries like these suggest that bending the rules of a playful platform like *Foursquare* can even be used in forms of political activism.

While we could debate whether actions like these can still be considered a form of cheating, the link between pervasive cheating and critique is nevertheless intriguing. It demonstrates once again that, as a practice pervading the spatial, temporal, and social boundaries of play, pervasive cheating has the potential to affect the real world in unexpected ways.

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BIBILIOGRAPHY

Aarseth, Espen J. *Cybertext: Perspectives on Ergodic Literature.* Baltimore: Johns Hopkins University Press, 1997.

Bogost, Ian. "Persuasive Games: Check-Ins Check Out." Gamasutra, 2010. <http://www.gamasutra.com/view/feature/4269/persuasive_games_checkins_check_.php>. Accessed Dec. 2012.

Bogost, Ian. "Persuasive Games: Exploitationware." Gamasutra, 2011. <http://www.gamasutra.com/view/feature/6366/persuasive_games_exploitationware.php>. Accessed Dec. 2012.

Boyd, Danah. "Why Youth (Heart) Social Network Sites: The Role of Networked Publics in Teenage Social Life." In *Youth, Identity, and Digital Media,* edited by David Buckingham. MacArthur Foundation Series on Digital Learning. Cambridge, MA: MIT Press, 2007.

Consalvo, Mia. *Cheating: Gaining Advantage in Videogames*. Cambridge, MA: MIT Press, 2007.

Consalvo, Mia. (2009) "There Is No Magic Circle." *Games and Culture* 4, no.4: 408–17, 2009.

Crowley, Dennis, and Naveen Selvadurai. *Foursquare.* [web/mobile app] Foursquare Labs, Inc, 2009.

de Lange, Michiel. *Moving Circles: Mobile Media and Playful Identities.* Ph.D. dissertation. Rotterdam: Erasmus University, 2010.

de Paoli, Stefano, and Aphra Kerr. "The Cheating Assemblage in MMORPGs: Toward a Sociotechnical Description of Cheating." Paper presented at:Breaking New Grounds: Innovation in Games, Play, Practice, and Theory, DiGRA 2009 Conference, London, Sept. 1–4. <http://www.digra.org/dl/db/09287.23190.pdf>. Accessed Dec. 2012.

Deterding, Sebastian. "Pawned. Gamification and Its Discontents". Paper presented at *Playful 2010*. Sept. 24, London, 2010.. <http://www.slideshare.net/dings/pawned-gamification-and-its-discontents>. Accessed Dec. 2012.

Deterding, Sebastian, Dan Dixon, Rilla Khaled, and Lennart Nacke. "From Game Design Elements to Gamefulness: Defining 'Gamification.'" Paper presented at MindTrek '11 2011. [Q: Is the abbreviated date the actual form in the title of the conference?] Sept. 28–30, Tampere, Finland. <http://dl.dropbox.com/u/220532/MindTrek_Gamification_Printer-Ready_110806_SDE_accepted_LEN_changes_1.pdf>. Accessed Dec 2012.

Fine, Gary Alan. *Shared Fantasy: Role-Playing Games as Social Worlds.* Chicago: University of Chicago Press, 1983.

Foursquare. (2010) "Foursquare FAQ: How do you prevent people from cheating?" 2010 <http://support.foursquare.com/entries/195341-how-do-you-prevent-people-from-cheating/>. Accessed Dec.2012.

Foursquare. (2010) "About". <https://foursquare.com/about>. Accessed April 2011.

Foursquare. (2011) "Foursquare Labs, Inc. Terms of Use." <https://foursquare.com/legal/terms>. Accessed Dec. 2012.

Frissen, Valerie, Jos de Mul, and Joost Raessens. "Homo Ludens 2.0: Play, Media, and Identity." Paper presented at Homo Ludens 2.0: Play/Media/Identity Conference, 2010. Utrecht: Utrecht University, Nov. 17–18.

Frissen, Valerie, Sybille Lammes, Michiel de Lange, Jos de Mul & Joost Raessens (eds.). *Homo Ludens Digitalis: Media, Play and Identity.* Amsterdam: Amsterdam University Press, forthcoming.

Glas, René. *Battlefields of Negotiation: Control, Agency, and Ownership in World of Warcraft.* Amsterdam: Amsterdam University Press, 2012.

Jørgensen, Kristine, Torill Mortensen, Luca Rossi, and René Glas.

"Framing the Game: Four Game-Related Approaches to Goffman's Frames." In *Online Gaming in Context: The Social and Cultural Significance of Online Games,* edited by Garry Crawford, Victoria K. Gosling, and Ben Light, 141–158. London: Routledge, 2011.

Goffman, Erving. *Frame Analysis: An Essay on the Organization of Experience.* Cambridge, MA: Harvard University Press, 1974.

Graft, Kris. "GDC 2011: Time To Ditch The Term 'Gamification'?" Gamasutra, 2011. <http://gamasutra.com/view/news/33315/GDC_2011_Time_To_Ditch_The_Term_Gamification.php>. Accessed Dec 2012.

He, Wenbo, Xue Liu, and Mai Ren. "Location Cheating: A Security Challenge to Location-based Social Network Services". In: *31st International Conference on Distributed Computing Systems (ICDCS)* conference publication, 2011. 740-749. <http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=5961726>.

Huizinga, Johan. *Homo Ludens*. Boston: Beacon Press, 1955.

Juul, Jesper. *Half-Real: Video Games between Real Rules and Fictional Worlds.* Cambridge, MA: MIT Press, 2005.

Juul, Jesper. "The Magic Circle and the Puzzle Piece." In *Conference Proceedings of The Philosophy of Computer Games,* edited by Stephan Grünzel, Michael Liebe, and Dieter Mersch, 56–67. Potsdam: Universität Potsdam, 2008.

Krazydad. "Mayor of the North Pole.", 2010. <http://www.krazydad.com/blog/2010/02/mayor-of-the-north-pole/>. Accessed Dec. 2012.

Kücklich, Julian. "Forbidden Pleasures: Cheating in Computer Games." In *The Pleasures of Computer Gaming: Essays on Cultural History, Theory and Aesthetics*, edited by Melanie Swalwell and Jason Wilson, 52–71. Jefferson, NC: McFarland & Co, 2008.

Kurtz, Scott R. "Hopscotch." [blog post]. *PvPonline.com*, 2010. <http://pvponline.com/news/hopscotch/>. Accessed Dec. 2012.

McGonigal, Jane. *Reality Is Broken: Why Games Make Us Better and*

How They Can Change the World. London: Jonathan Cape, 2011.

mia1984. "Indonesians on the Social Network.", 2010. <http://mia1984.wordpress.com/2010/10/29/indonesians-on-the-social-network/>. Accessed April 2011.

Montola, Markus, Jaakko Stenros, and Annika Waern. *Pervasive Games: Theory and Design.* Burlington, MA: Morgan Kaufman, 2009.

Montola, Markus. "Games and Pervasive Games." In *Pervasive Games: Theory and Design,* ed. Montola et al., 7–24. Burlington, MA: Morgan Kaufman, 2009.

Pargman, Daniel, and Peter Jakobsson. "Do You Believe in Magic? Computer Games in Everyday Life." *European Journal of Cultural Studies* 11, no. 2, 2008: 225–44.

Raessens, Joost. "Playful identities, or the ludification of culture". Games and Culture 1, no. 1, 2006. 52-57.

Robertson, Margaret. "Can't play, won't play." Hide&Seek (blog). 2010. <http://www.hideandseek.net/cant-play-wont-play/>. Accessed March 2011.

Salen, Katie, and Eric Zimmerman. *Rules of Play: Game Design Fundamentals*. Cambridge, MA: MIT Press, 2004.

Stenros, Jaakko, Markus Montola, and Frans Mäyrä. "Pervasive Games in Media Culture." In *Pervasive Games: Theory and Design,* ed. Montola et al., 257–76. Burlington, MA: Morgan Kaufman, 2009.

Team Foursquare. "On foursquare, cheating, and claiming mayorships from your couch..". 2010. <http://blog.foursquare.com/2010/04/07/503822143/>. Accessed Dec. 2012.

Tondorf, Woody. *Foursquare Cops*. [video web series] HubSpot Blog, 2010. <http://blog.hubspot.com/foursquare-cops/tabid/76228/Default.aspx>. Accessed Dec. 2012.

van Buskirk, Eliot. "Foursquare: The SXSW Interview." Wired.com/Underwire, 2011. <http://www.wired.com/underwire/2011/03/foursquare-the-sxsw-interview/>. Accessed Dec. 2012.

Making Sense of Game-Play: How Can We Examine Learning and Involvement?

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INTRODUCTION

The gaming industry continues to expand, with different types of games appealing to wider audiences than ever before. For instance, when *Call of Duty: Black Ops* (Treyarch, 2010) was released, it made US$360 million in the U.S. and the UK within 24 hours (Stuart, 2010). Further, Facebook games such as *Farmville* (Zygna, 2009) and technological developments such as motion control (e.g., Nintendo's Wiimote, Microsoft's Kinect) seem to have opened up games to new audiences and helped to increase their cultural acceptance. At the same time, there continue to be claims made about the potential of games for learning (e.g., Gibson et al., 2010) not least because games often motivate people to devote hours to solving the challenges presented to them. However, there is a need for more "rigorous research into what players do with games (particularly those that don't claim explicit status as educational), and a better understanding of the thinking that is involved in playing them" (Squire, 2008, p.167). It can be argued that the field would benefit from investigating both how and what people learn through their involvement with games.

In order to further explore these issues, this paper reports on research which developed a set of methods for exploring how learning and involvement come together in and around instances of play. The next section introduces the relevant literature within the; this is followed by a description of the approach developed for the study. The aim of this paper is not to present specific findings, but to examine the strengths and limitations of the methods developed regarding two particular methodological issues: (i) identifying different types of breakdowns and breakthroughs that occurred during game-play; (ii) identifying learning which occurred beyond instances of game-play.

RELATED WORK

Player Involvement and Learning

One of the earliest models proposed to account for involvement in games comes from Malone and colleagues who proposed a theory of *intrinsic motivation*. This was derived from experimental manipulations of drill and practice games that suggested that games are rewarding because of the ways in which they combine the elements of challenge, fantasy, and curiosity (Malone, 1981). Later work (Malone and Lepper, 1987) also added the element of control, as well as further interpersonal motivators (recognition, competition and cooperation). However, it has been argued that, despite the later inclusion of interpersonal motivators, there is too narrow a focus on the structure of the game itself, without sufficient attention being paid to the social dynamics that occur around it and to the context within which the game itself is played (Egenfeldt-Nielsen et al., 2008).

Another general theory of motivation, which has recently been applied to games (Ryan, Rigby, and Przybylski, 2006) is *self-determination theory* (SDT). Ryan et al. (2006) suggest that people play in order to satisfy our psychological need for: competence (need to experience challenge), autonomy (sense of volition), and relatedness (feeling connected to others). While relatedness does suggest a social reason for

becoming involved in games, it could be argued that this theory still tells us little about the context in which this involvement occurs. Further, neither the work of Ryan et al. nor that of Malone and colleagues appears to tell us much about how involvement relates to any learning that results from game-play.

One model which does suggest how involvement and learning affect each other is the *Digital Game Experience Model* (DGEM; Calleja, 2007). In later work this model is referred to as the *Player Involvement Model* (Calleja, 2011). Specifically, Calleja distinguishes between "macro-involvement" which refers to "motivational attractors to games that influence sustained engagement through the long-term" and "micro-involvement" which refers to "the moment-by-moment involvement of the game-play instance" (Calleja, 2007; p. 237). The macro-level can be used to consider activities that occur around play, while the micro-level refers to the experience of play itself. This distinction allows for a discussion of the learning and involvement experienced during play (e.g., Iacovides, 2009; suggesting that deeper levels of involvement actually depend on how the player internalises, i.e., learns about, different aspects of the game). Further, the model can be used to consider how activities that occur outside of the moment of game-play (e.g., using a walkthrough or discussing a game with friends) might affect longer term motivations.

Gee (2004) addresses the issue of how people learn through their involvement with games, by providing an account based on his own observations and semiotic analysis. He argues that when people play games they are actively engaged in the process of learning a new literacy. This literacy includes multi-modal texts and graphical representations. Through gaming, players learn to participate in *semiotic domains* made up of words, pictures, and/or anything else that is used to communicate meaning. These domains are associated with specific *affinity groups* of players whose knowledge, skills, tools, and resources

contribute to form complex systems of distributed parts. These groups could be considered a community of practice (Lave and Wenger, 1991), where learning occurs when players gain resources from fellow members to help them to solve problems within, and sometimes outside of, the specific domain. Gee (2004) uses the term *critical learning* to refer to the learning experienced when the player starts to consider "the domain at a 'meta' level as a complex system of interrelated parts" (p. 23). He also argues that critical learning involves not just a change in practice, "but in *identity*" (p. 190). He goes on to discuss the learning that occurs through the adoption of and experimentation with different identities, as well as through the ability to reflect upon the relationship between old and new ones.

However, Pelletier and Oliver (2006) argue that while Gee provides a strong account of how learning through games can occur, he does not provide researchers with the tools for examining different games and contexts. Further, they point out that the literature in the area lacks "a method that looks at the process and outcomes of play, explaining how this relates to the design of the game as well as the social and cultural aspect of play" (p. 331). It could also be argued that the area would benefit from further empirical research to substantiate Gee's semiotic analysis. Thus, there is a need to develop methods which can be used to examine the different ways in which involvement and learning actually do come together *in* and *around* instances of game-play.

Considering Wider Activities

In order to explore in more detail the activity that occurs around game-play (through player involvement on a macro-level), the concept of *gaming capital* can provide useful insights. Consalvo (2007) developed this concept from Bourdieu's (1984) notion of *cultural capital* in order to

> Capture how being a member of game culture is about more

> than playing games or even playing them well. It's being knowledgeable about game releases and secrets, and passing that information on to others. It's having opinions about which game magazines are better and the best sites for walkthroughs on the Internet (p. 18).

Consalvo discusses the ways in which *paratexts* help players to acquire gaming capital. Paratexts are external resources that can "surround, shape, support, and provide context for texts" (p.182). So, in this context, games themselves constitute the primary texts, while examples of paratexts include walkthroughs, reviews, YouTube videos, blogs, and magazines that relate to games. Players can thus increase their knowledge about games and game-play practices by consulting these various resources. Both the concept of gaming capital and the idea of paratexts can be helpful for considering involvement and informal learning in relation to community membership. To use Gee's terminology, gaming capital might help explain why players choose to participate in different affinity groups and semiotic domains.

Evaluating Game-Play

There are numerous different ways in which researchers have tried to evaluate aspects of the game-play experience. For instance, Pelletier and Oliver (2006) used a small-scale case-study approach to present a method for examining how people learn to play games. Using an approach based on *Activity Theory* (Kuutti, 1996), they decided to decompose activities into *actions* and *operations* and to take note of any *contradictions* (i.e. breakdowns, problems) that occurred. This allowed them to identify and discuss the strategies players adopted but focusing purely on the game-play meant that they had to make certain inferences about what players were trying to do. As a result, it is difficult to gauge the extent to which the inferences the authors made actually governed players' behaviour within the game.

Ryan and Siegel (2009) also used the concept of breakdowns for examining game-play and drew upon the earlier work of Marsh et al. (2001), by making a distinction between a breakdown in interaction and a breakdown in illusion. Breakdowns are generally described as occurring "when actions we take to accomplish something no longer seems [sic] to work" (p.1). The term *breakdowns in interaction* refers to what they call "the natural breakdowns" that lead to learning within the game; *breakdowns in illusion* refers to a loss of immersion (in terms of absorbed attention). Ryan and Siegel argue that the former are part of normal game-play but, unlike the latter, they do not disrupt the experience of flow. As a result of their analysis of game-play, they present four main categories of breakdown (which relate to perceiving the environment, developing strategy, taking action, and meaning-making), though they do not make a point of indicating which of them (and their associated subcategories) are breakdowns of interaction or of illusion. They seem to imply that most stem from interaction issues but that some of these can also lead to further breakdowns in illusion. In recent work, Sharples (2009) adopts a different focus, using critical incident analysis to identify breakdowns and breakthroughs in order to gather mobile technology design requirements within an educational context. In this instance, breakdowns are "observable critical incidents where a learner is struggling with the technology, asking for help, or appears to be labouring under a clear misunderstanding," while breakthroughs are "observable critical incidents which appear to be initiating productive, new forms of learning or important conceptual change" (p. 10).

There has also been interest in using physiological measures to examine players' emotional reactions to game-play. For instance, Mandryk and colleagues tested the efficacy of using physiological data to evaluate entertainment technologies. They found that galvanic skin response (GSR) was able to distinguish between conditions that involved playing a game with a friend and conditions that involved

playing against a computer (Mandryk and Inkpen, 2004). They also suggested that this kind of data can be used to provide a continuous, objective measure of emotional experience (Mandryk and Atkins, 2007), though this is still a time-consuming and complex approach to adopt and it is not always clear which emotions are being modelled. Further, their findings are based on five-minute episodes of playing a sports game within a lab environment. Although this makes sense for the in-depth analysis appropriate to their study, such a setup does not seem particularly representative of typical console-play activity. A definitive model of emotion derived from these physiological signals has yet to be established, but Hazlett (2008) does suggest that this kind of data can be used in real-time to indicate when significant instances have occurred, which the player can then be asked about afterwards.

It appears that there are a number of ways in which to examine different aspects of the game-play experience, but there is still a lack of studies that look at both micro and macro-level involvement over longer periods of time, especially in relation to learning. An exploratory, mixed-method, case-study approach would be helpful in furthering our understanding of how involvement and learning come together in and around episodes of game-play (Iacovides et al., 2011a).

METHODOLOGY

Research Questions

The study discussed in this paper is part of a larger project that aims to explore the relationship between motivation, engagement, and informal learning that occurs through playing digital games (reported in Iacovides, 2012). For purposes of this research, Calleja's definition of involvement was adopted (Calleja, 2007). More specifically, the term *micro-involvement* is used to refer to player engagement during episodes of game-play, and *macro-involvement* is used to discuss players' general motivations and gaming-related activities that occurred outside the instance of play. In this case, *learning* refers to the informal

learning that is a result of gaming activities, whether players achieve this alone, or through collaboration with others (directly or indirectly through the use of paratexts). In Vavoula et al.'s (2005) terms, this sort of learning is informal in the sense that it takes place outside of a formal context (where a teacher would normally define learning goals and processes) and in most circumstances it could also be called unintentional since learning is unlikely to be the main goal of play.

In order to gain a better understanding of how involvement and learning come together in practice, the study described addressed the following questions:

1. How can we identify breakdowns that occur during play?
   a. How do players attempt to resolve these breakdowns?
   b. What role do breakthroughs play in this process?
2. What can examining breakdowns and breakthroughs tell us about how involvement and learning come together in practice?
3. What evidence is there that players are learning in addition to learning how to play?

The purpose of this paper is to focus on the methods developed and to evaluate how useful they were for addressing the research questions listed above. The findings are reported elsewhere (Iacovides et al., 2011c; Iacovides, 2012). The following sections describe how the study was carried out. Examples from the case studies will subsequently be used to illustrate how useful the methods were for identifying (i) breakdowns and breakthroughs and (ii) evidence of learning that occurred beyond instances of play. The paper will conclude with a reflection on strengths and weaknesses of the approach and an outline of future work.

Design and Participants

In order to address the research questions, investigators adopted an exploratory case-study approach, involving the use of multiple methods. The approach was adapted from previous work carried out by Iacovides (2009), who used cued retrospective reports to examine learning with respect to micro-level involvement. Yin (2009) argues that collecting multiple sources of data helps to increase validity when using a case-study approach, while reliability can be ensured by following a case-study protocol. Using a protocol ensures that the researcher follows a similar procedure in each case; so a protocol was developed for the first author to follow during each lab session and interview.

Eight cases were completed, with nine participants in total (ages 23–59; five male, four female). Seven cases consisted of a single participant who came into the lab on three occasions and kept a gaming diary over a three-week period; the eighth case consisted of two participants, a married couple. The couple were included in order to test the efficacy of the method in dealing with more than one player and to consider some of the social influences that might affect involvement and learning. Investigators recruited players from a previous email interview study (Iacovides et al., 2011b). Players differed in terms of age and in how they identified as gamers (a mix of casual and more serious gamers was selected), with the aim of maximising the differences between cases as far as possible (Stake, 2003). The lab was set up as a comfortable living room environment, with a couch, a wide-screen TV, and game consoles for the use of the participants.

Procedure and Methods

A variety of methods was used, including observation, post-play interview, the collection of physiological data, and the gaming diaries kept by participants for three weeks. The physiological measures were chosen on the basis of research carried out by Mandryk and colleagues

(e.g., Mandryk and Atkins, 2007). The data was collected using the ProComp Infiniti system and sensors, with BioGraph Software from Thought Technologies. Galvanic skin response (GSR) was collected with surface electrodes snapped onto Velcro straps worn around the index and ring fingers. For electrocardiography (EKG), three pre-gelled surface electrodes were attached in the standard configuration of two on the chest and one on the abdomen. Heart rate is calculated from this EKG signal. For electromyography (EMG), surface electrodes were used on the jaw (indicative of tension), cheek (indicative of smiling), and forehead (indicative of frowning). Three electrodes preconfigured in a triangular arrangement were used on the jaw and cheek, while separate extender cables were used for the forehead. Facial and body hair can interfere with the EKG and EMG signals; participants were screened to avoid this possible problem.

Participants were asked to come into the lab and be observed as they played on three separate occasions. The first session was mainly introductory, consisting of a preliminary interview and an introduction to the physiological equipment. The participants also filled in a short questionnaire about gaming habits and preferences and signed a consent form. They had been asked to bring in a game of their choice to play in the lab for 15 minutes during the first session; this was intended to familiarise them with the physiological equipment and the procedure they would be following in subsequent sessions (during which they would be playing for up to an hour). A three-minute baseline measure for the physiological recordings was taken before and after the game-play sessions, for comparative purposes. During game-play, the first author observed the session from a separate room with camera feeds of the player and the game-play as well as the player's physiological reactions. After the game-play, the investigator reviewed the video recording with the participant so that they could discuss what the player had been thinking and feeling during the session. Tea or coffee and biscuits were provided during the post-play interview to

help make the experience more comfortable and relaxed.

The second session took place the following week; again, the participants were asked to bring in what they were currently playing. Care was taken to ensure that players could continue their progress from the last time they had played by either transferring a saved game file to the lab console or asking them to bring in their own console to play on. The rationale for this was to tap into an experience in which the players were genuinely motivated to play a game. In the third session, the players were asked to play a game that they had not played before, which was also the sort of game they were unlikely to pick for themselves (selected for them on the basis of the preliminary interview). The purpose of this was to examine what happened when they played something unfamiliar, though care was taken to make sure they had no objections to the first author's choice. Sessions lasted between two and three hours.

Finally, participants were required to keep a paper-based diary of their game-playing and game-related activities over the period of the study. This diary included questions to prompt the participants; so, in addition to asking them to take note of what they played every day and for how long, the questions also covered what they did when they got stuck, who they talked to about games, whether they visited or contributed to paratexts (websites, forums, etc.), and whether they thought they had learnt anything from their activities. The diaries were intended to keep track of game-play which occurred outside the lab and to provide an indication of macro-level involvement. The study concluded with a final semi-structured interview (lasting 30 minutes to an hour) which was based on the diary entries. The diary-interview method is explained in further detail by Elliot (1997). Participants received a £15 Amazon voucher (approximately 17 Euros or 24 US dollars) to thank them for their participation in the study.

Analytic Process

In order to examine the video recordings, investigators used transcriptions of the post-play interviews to identify initial breakdowns and breakthroughs. INTERACT™ (Mangold International GmbH), a video analysis tool, was then used to code the multiple data streams (see Figure 1) in terms of the various breakdowns and breakthroughs that occurred.

The first stage of the analysis involved examination of a player's micro-level involvement. The physiological data was originally intended to signal significant instances to the investigator, which could then be followed up during the post-play interview; as suggested by Hazlett (2008). However, it was particularly challenging for a single observer to keep track of the several physiological reactions while simultaneously watching the camera views of the player and the game-play. For this reason, it was decided that it would be more suitable to use the data during the post-play analysis in order to pinpoint significant episodes and issues. Unfortunately, this also proved to be unfeasible due to the large amount of data collected within each session, where frequent changes would occur within the 30 to 60 minute episodes. Further, given that these signals can vary greatly between individuals and that many of the larger changes were actually due to movement artefacts (rather than being the result of the player reacting to in-game stimuli), it was not clear how to establish whether a change was significant or not. Even though baseline readings were taken prior to each session, all that can be said is that players did show more physiological activity during game-play than they did at rest.

Therefore, a final attempt was made to examine the physiological data in relation to specific episodes which had been deemed significant on the basis of the post-play interview data. However, this was not successful either, due to the difficulty of interpreting the signals and

establishing meaningful patterns in relation to the different types of breakdown and breakthrough. As Kivikangas et al. (2010) point out, games are much more complicated stimuli than those adopted within previous psychophysiological research (e.g., where reactions are measured while participants view a sequence of standardised images). Further, despite the claim that these signals can provide an objective measure of the player experience (e.g., Mandryk and Atkins, 2007), they still have to be interpreted – and this is not a simple task (Isbister et al., 2007).

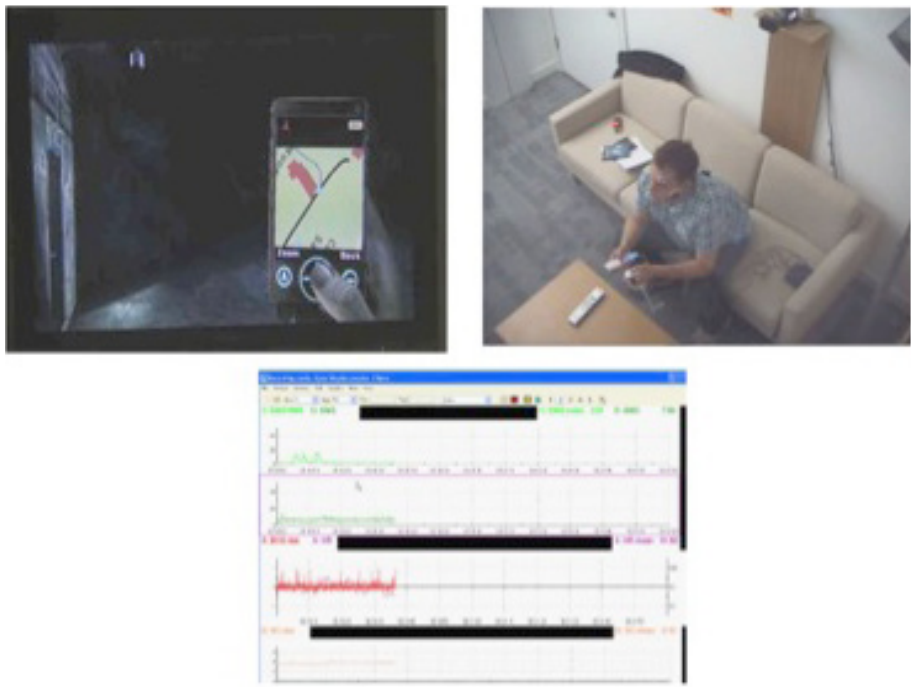

Figure 1: Video recordings of the game-play, the player, and the physiological readings (Case 1: Matt playing *Silent Hill: Shattered Memories*).

In order to provide an illustration of how using this sort of data proved challenging under these circumstances and how it did not help with identifying breakdowns and breakthroughs, two examples are provided below.

Figure 2 shows an extract from Linda's (F, 59) session playing Lego Indiana Jones 2 (Traveller's Tales, 2009). This example indicates the range of individual differences. Linda would frequently talk to herself during the session, and sometimes hum the theme tune, but even in quieter moments, she showed much more EMG activity than the other participants. The figure below shows Linda's physiological activity for part of the section of the game when she returns to the main hub in between levels. The top graph represents EMG cheek activity, the second EMG forehead, the third EKG and heart rate, and the bottom graph shows GSR.

The first vertical dotted line (in bold) represents Linda's exit from the previous area, while the second indicates when she leaves the hub. At 18.45, Linda realises that she has not discovered a new part of the game and becomes frustrated, stating during play: "Back here again? How on earth did that happen?," she confirmed had made her "cross" when discussing the episode in the post-play interview. This frustration does seem to correlate with increases in GSR and EMG cheek and forehead, but several of the other peaks are less easy to interpret. While some of the heightened EMG activity (for both cheek and forehead) can be attributed to movement and speech (e.g., at approximately 20.05, Linda sighs quite loudly), much of it seems to occur without an obvious cause.

Figure 2: Linda playing *Indiana Jones 2*.

In contrast to Figure 2, Figure 3 illustrates Alex's (M, 41) physiological data from a particular episode of Flower (Thatgamecompany, 2010), in which he showed very little physiological reaction, despite experiencing multiple breakdowns during this time. While the first vertical dotted line indicates a small change in EMG cheek and heart-rate activity – seemingly as a result of a short animation (unlocking a new part of the area for him to explore) – Alex appears to show little reaction to the rest of the canyon sequence (the second dotted line represents the end of this section). This is in spite of the fact that he often missed the petals he thought he had to collect, felt "disconcerted" by part of the sequence, and got a bit "fed up" with aspects of the game during this time.

In short, movement artefacts, the difficulty of interpreting the data in relation to specific stimuli and the lack of consistent patterns observed within the sessions meant the signals did not prove useful for identifying the breakdowns and breakthroughs which occur during gameplay. Existing research has examined these signals as the basis for

modelling emotion (e.g., Mandryk and Atkins, 2007) and for distinguishing between positive and negative emotions (e.g., Hazlett, 2008), on the basis of experiments using controlled conditions. However, even if an experimental approach were adopted, the analysis indicates that physiological data is not particularly helpful for pinpointing breakdowns and breakthroughs.

Figure 3: Alex playing *Flower*.

Further, there is another potential confound that requires attention, and this is the impact that being observed can have on the player. For instance, Amy (F, 28) would often laugh when playing *Mario Kart* (Nintendo EAD, 2008) – usually when something negative had happened. When questioned about it, Amy suggested that "If I'd been on my own, I might have just got annoyed," but because she was aware of being watched, "I guess you kind of go, well I'm not going to get annoyed, so, I may as well just find it amusing. As an alternative emotional response to the stupidness that is this game." This raises an issue in terms of whether the physiological reactions which are being

reported in the literature really do represent some of the emotions researchers are attempting to investigate, or whether they are in fact indicators of some people's complex emotional reaction to playing a game while knowing someone else is monitoring their behaviour.

The final stage of analysis involved the examination of the gaming diaries. The hand-written diary entries were typed up into Microsoft Word documents and the diary interview was transcribed so that Nvivo 8 software could be used to analyse these transcripts. Particular attention paid to identifying breakdowns and breakthroughs that occurred during game-play sessions outside of the lab. The emphasis was on identifying macro-level interactions (e.g., looking at gaming websites or guides) and any evidence that suggested learning occurring beyond learning how to play. This analysis also included the application of prior themes, developed in an earlier study, that relate to the concept of gaming capital (Iacovides et al., 2011a) and categories that relate to learning (Iacovides et al., 2011b).

METHODOLOGICAL ISSUES

This section offers a reflection on the method developed. Some examples from the case studies will be presented below in order to illustrate the degree to which the adopted methods were able to capture the following methodological issues.

(i) Identifying Breakdowns and Breakthroughs That Occurred during Game-Play

The main focus of the video analysis was on coding for the different types of breakdowns that occurred during play, the attempts made to overcome these breakdowns, and any breakthroughs that occurred during these attempts. The breakdowns and breakthroughs were subsequently classified as major or minor, and then discussed by the authors in order to establish which ones could be regarded as involving important episodes and underlying issues. While this was a time-con-

suming process, utilising the video recordings in conjunction with the post-play interview transcripts was very useful for capturing large amounts of rich evidence concerning the different types of breakdowns and breakthroughs that occurred. As stated earlier, the physiological data was not found to be useful for identifying breakdowns and breakthroughs.

The following case-study example illustrates how the methods were applied. When Matt (M, 24) was playing *Silent Hill: Shattered Memories* (Climax Group, 2009), he entered a part of the game which he referred to as the nightmare realm and soon found himself being chased by monsters. There are no weapons within the game, so he had to come up with different ways of avoiding these monsters. Soon after he entered this realm, it became apparent that Matt was having trouble doing that and in terms of navigating through the environment. This soon led to his character's death and his having to start again from the last save point; this was identified as an important episode. It seemed clear that this failure frustrated Matt, not so much because his character had died, but because he did not think he had done anything wrong: "I just got trapped, I went under the bed but he found me, twice, and then I'm trying to run away, which is a dead end anyway, and as soon as one found me, all three found me, which was quite annoying. I was, like, that's not fair at all." This suggests that Matt was experiencing breakdowns on numerous levels: as his attempts to avoid the monsters were unsuccessful, he did not understand why his actions were unsuccessful; and he subsequently experienced a loss of agency, where he saw the game as being at fault rather than himself. However, after this episode, Matt started to develop more effective ways of dealing with the monsters, and also experienced a breakthrough in understanding when he realised that the GPS function on his character's phone (see Figure 1) also indicated the location of the monsters.

Nevertheless, Matt still did experience difficulties with navigating

through the environment as minor breakdowns. Due to the pressure of being chased through parts of the nightmare realm which looked very similar, he often felt unsure about where he was going. After a while, he found himself in a new area: "I was quite happy to see outside because I wasn't just running round in circles through doors." This new area arguably resulted in a breakthrough in terms of involvement since it was seen as confirmation of progress, despite Matt being unsure about how he had reached this point. Interestingly, his uncertainty suggests he was able to progress within the game, but without experiencing a breakthrough in understanding – something considered further in Iacovides (2012).

Finally, the diary entries allow us to track Matt's experience with *Silent Hill* over time, illustrating how little he played the game, especially in comparison with how often he played *Metro 2033* (4A games, 2010) in the same time period. The diary interview also gives us further insight into why he gradually lost interest *Silent Hill*. Despite initially being intrigued by the narrative, he grew frustrated with the mechanics. In short, he felt the game-play in the nightmare realm was "a bit arbitrary" because "when you got chased, you couldn't really do much about it," and so it ended up at "the bottom of the list" of what he wanted to play. The lack of agency he expresses suggests that Matt experienced a fundamental breakdown in involvement and soon lost interest in the game.

As Matt's case indicates, the diaries were another source of evidence concerning breakdowns and breakthroughs, though due to their retrospective nature the evidence they provide is far less detailed than that provided by the video and post-play interview data. On the plus side, they can capture more naturalistic events since they refer to activity outside of the lab. For instance, Natasha (F, 31) notes an episode that occurred when she was playing *Doctor Who: The Adventure Games* (Sumo Digital, 2010), in which she experienced a breakdown in the

form of not being able to get past the Dalek enemies without getting shot. She "tried two or three times before giving up and handing the game over to William" (her husband) as she found the controls "very fiddly"; though she watched him play for another half-hour, she soon grew "bored" with it. It is interesting to note that, during the three-week study period, neither Natasha nor William reports playing this game again. In another case, Linda (F, 59) reports breakdowns beyond her control when experiencing server problems while trying to play *Farmville* (Zynga, 2009). She also discusses getting stuck on a couple of occasions when trying to solve the murder mystery puzzles in *Broken Sword: The Shadow of the Templars* (Revolution Software, 2009). In the latter case, she used the in-game hint system as a "prompt" in cases where she felt the "brain gets into a stuck groove and lateral thinking [is] usually needed." This is an example of how the game itself can facilitate breakthroughs that are necessary for continued progress.

(ii) Identifying Learning beyond Instances of Game-Play

The diary entries were also able to capture player interactions with paratexts, such as when Matt looked up a forum post about the various weapons he could buy in *Metro 2033*, in order to try and find out which ones he should save up for within the game. These interactions also included such instances as Matt regularly checking Reddit games (a site aggregator) to keep up-to-date on the latest gaming news. Here, Matt was accessing the wider gaming community for knowledge about new releases and developments within the industry. Further, Matt's use of paratexts relates to the concept of gaming capital, in the sense that he already seemed to know how to access the information he wanted; as a gamer, he likes to keep up to date about different gaming developments.

Another example of how the diaries captured learning outside of game-play concerns Justin (M, 32), who ended up looking up some general knowledge after playing *God of War III* (Santa Monica Studio,

2010) in order to find out more about Greek mythology and "some of the more obscure characters in the game." This is also a good example of learning through tangential resources (as opposed to paratexts) since it illustrates how a game experience can inspire curiosity and the urge to learn about something beyond the level of the game.

The diaries were also able to capture the development of collaborative skills, as when Linda played drums on *Guitar Hero 5* (Neversoft, 2009) with her daughter, who played guitar, as a reward after doing housework. In addition, the interviews were used as an opportunity for participants to talk about their general gaming activities over time, so that while Alex (M, 41) frequently mentioned playing with his son in the diary entries, it became clear from the interview that they would frequently bond over game-play and use the episodes to discuss other issues, such as the fact that using walkthroughs can be helpful, but it can be more rewarding when you put more effort into activities and succeed on your own.

While the diaries were useful for capturing activities outside of the lab and the final diary interviews provided richer descriptions of these activities, some of the evidence for learning that occurred beyond learning how to play surfaced also during the observation and post-play interview phases of the study. For instance, it became clear from Katy's (F, 23) interview about her session playing *Zelda: Twilight Princess* (Nintendo EAD, 2007) that she had developed a strong empathy for the character. She used the phrase "Poor Link" on several occasions; this was usually a response to the character Link dying within the game, but she discussed aspects of the narrative as being "really sad" when you considered them from his point of view. Further, she reflected on how there had been times when she acted within the game in specific ways because "that's the way Link would do it," but sometimes she did things "just out of curiosity." For example, at one point she talked to all the characters within an area because, even though

"Link would probably run straight through the door," she wanted to see what *they* had to say. Though this was a rare occurrence, this sort of thinking is a good example of what Gee (2004) seems to be referring to when he talks about the critical learning that occurs when players consider the relationship between their individual and virtual identities.

DISCUSSION

In order to explore how player involvement and learning come together in and around instances of game-play, a multi-method, case-study approach was developed. This paper has sought to address two specific methodological issues: (i) how to identify different types of breakdowns and breakthroughs that occur during game-play; and (ii) how to identify learning which occurs beyond game-play.

In terms of issue (i), the physiological data did not prove useful for identifying breakdowns and breakthroughs. Further, while the video recordings of the game-play and player could have been relied on to identify various breakdowns and breakthroughs that occur on a micro-level, without the post-play interview, investigators would have had to make certain inferences about the nature of these. For instance, when Matt died in *Silent Hill*, it would have been reasonable to assume that the fact of dying had annoyed him, especially in conjunction with the footage of him shaking his head afterwards and saying "I don't know" just after the event. However, the underlying issue here would have been missed. Matt was not annoyed because he had died; he was annoyed because he didn't understand why he had died. This breakdown in understanding was compounded by his general confusion about where he was supposed to go, even though he experienced some minor breakthroughs in the form of developing new strategies. The diary entries also allowed for insight into players' involvement over time, such as Matt's giving up on *Silent Hill*. Further, while the lab was set up for console game-play, the diaries were able to capture game-play on other devices, including computers, handheld consoles,

and mobile phones, which could then be discussed in the final interview. Collecting data from multiple sources helped in terms of triangulating the data for identifying breakdowns and breakthroughs, and this in turn allowed for a more in-depth understanding of how these breakdowns and breakthroughs occur over time.

In terms of issue (ii), the methods developed allowed investigators to gain further insight into the learning that occurred beyond instances of play, in terms of players' macro-level involvement with games. The diaries enabled us to take into account player involvement with external resources, such as game paratexts; which were consulted for game advice and for keeping up-to-date with general gaming developments. The diaries also captured instances of players further exploring information they had encountered within a game—e.g., Justin looking up aspects of Greek mythology. Keeping up-to-date with gaming news and looking up further information can also been seen as examples of learning beyond the experience of learning how to play. The final interview based on the diary entries also meant participants could elaborate on instances of game-play, and this was especially useful for considering participant involvement in wider gaming activities. In addition, by asking participants to bring in a game of their choice, and to further discuss this choice during the interviews, we were able to gain a deeper understanding of their involvement and learning than would have been possible from just observing a session of game-play. For instance, Katy chose to bring in *Zelda: Twilight Princess* as she had decided to replay it, much like "re-reading a favourite book." Both the post-play and the diary interviews revealed that she had a long-running involvement with the Zelda series, suggesting that the empathy she displayed for the characters was something that had developed as a result of years of playing Zelda games and engaging in game-related activities such as role-playing and writing fan fiction. Again, the method allowed not only for triangulation of data, but also for a consideration of a player's history and the different kinds of learning

and involvement that occur over time.

However, there are limitations to this approach. The most obvious disadvantage is the amount of time required to conduct the study and analyse the data. Further, it should be noted that while the introductory session and the length of the main game-play sessions helped participants feel at ease within the lab, some did report feeling aware of the fact that they were being observed. Finally, as this is a case-study approach, care must be taken when statistical generalisations and comparisons between sessions are made. Nevertheless, as Yin (2009) argues, the aim of a case-study approach is "to expand and generalise theories (analytical generalization) not to enumerate frequencies (statistical generalisation)" (p. 15). Thus the findings can be considered in terms of general theoretical propositions about how involvement and learning relate to each other (see Iacovides et al., 2011c; Iacovides, 2012).

This paper illustrates how the methods described were able to capture a range of issues relating to involvement and learning. By looking for general patterns across the rich and informative data set, we can gain a deeper understanding of how involvement and learning come together in and around instances of game-play. It is only through taking both macro and micro-level experiences into account that we can really address just "what players do with games" and "the thinking that is involved in playing them" (Squire, 2008; p.167).

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BIBLIOGRAPHY

4A Games. *Metro 2033* [Xbox 360], THQ, 2010. Played April 2010.

Bourdieu, P. *Distinction: A Social Critique of the Judgement of Taste.* Cambridge, MA: Harvard University Press, 1984.

Calleja, G. "Digital Game Involvement: A Conceptual Model." *Games and Culture* 2, 2007: 236–260.

Calleja, G. *In-Game: From Immersion to Incorporation*. Cambridge, MA: MIT Press, 2011.

Climax Group. *Silent Hill: Shattered Memories* [Wii], Konami Digital Entertainment, 2009. Played April-May 2010.

Consalvo, M. *Cheating: Gaining Advantage in Videogames*. Cambridge, MA: MIT Press, 2007.

Egenfeldt-Nielsen, S., J. H. Smith, and S. P. Tosca. *Understanding Video Games: The Essential Introduction.* New York and London: Routledge, 2008.

Elliott, H. "The Use of Diaries in Sociological Research on Health Experience. Sociological Research Online 2, no. 2, 1997. http://www.socresonline.org.uk/2/2/7.html.

Gee, J. P. *What Video Games Have to Teach Us About Learning and Literacy*. New York: Palgrave Macmillan, 2004.

Gibson, D., C. Aldrich, and M. Prensky., eds. *Games and Simulations in Online Learning: Research and Development Frameworks.* Hershey, PA: Information Science Publishing, 2007.

Hazlett, R. L. "Using Biometric Measurement to Create Emotionally Compelling Games." In *Game Usability: Advice from the Experts for Advancing the Player Experience,* edited by K. Isbister and N. Schaffer,187–206. Burlington, MA: Morgan Kauffman Publishers, 2008.

Iacovides, I. "Exploring the Link between Player Involvement and Learning within Digital Games." *Proceedings of the 23rd Conference on Human Computer Interaction*, 29–34, Cambridge, UK. 2009.

Iacovides I., J. C. Aczel, E. Scanlon, J. Taylor, and W. I. S. Woods. "Motivation, Engagement and Learning through Digital Games." *Journal of Virtual and Personal Learning Environments* 2(2), 1–16, 2011a.

Iacovides, I., J. C. Aczel, E. Scanlon, and W. I. S. Woods. "What Do Players Have to Say about Informal Learning through Games?" Paper accepted for the 14th Biennial Conference of the European Association for Research on Learning and Instruction, University of Exeter, UK, 2011b.

Iacovides, I., J. C. Aczel, E. Scanlon and W. I. S. Woods. "What Can Breakdowns and Breakthroughs Tell Us about Learning and Involvement Experienced during Game-Play?" *Proceedings of the 5th European Conference on Games Based Learning*, 275–281, Athens, Greece, 2011c.

Iacovides, I. "Digital Games: Motivation, Engagement and Informal Learning." Unpublished Ph.D. thesis, The Open University, UK, 2012.

Isbister, K., K. Höök, J. Laaksolahti, and M. Sharp "The Sensual Evaluation Instrument: Developing a Trans-Cultural Self-Report Measure of Affect." *International Journal of Human-Computer Studies* 65(4), 2007: 315–328.

Kivikangas, J. M., I. Ekman, G. Chanel, S. Järvelä, M. Salminen, B. Cowley, P. Henttonen, and N. Ravaja "Review on psychophysiological methods in game research." *Proceedings of 1st Nordic Digital Games Research Association Conference*, August 16–17, 2010, Stockholm.

Kuutti, K. "Activity Theory as a Potential Framework for Human Computer Interaction Research." In *Context and Consciousness: Activity Theory and Human-Computer Interaction,* edited by B. A. Nardi, 17–44. Cambridge, MA: MIT Press, 1996.

Lave, J., and E. Wegner. Situated Learning: Legitimate Peripheral Participation. Cambridge University Press, UK, 1991.

Malone, T. W. "Toward a Theory of Intrinsically Motivating Instruc-

tion." *Cognitive Science: A Multidisciplinary Journal* 5, 1981: 333–369.

Malone, T. W., and M. R. Lepper. "Making Learning Fun: A Taxonomy of Intrinsic Motivations for Learning. *Aptitude, Learning, and Instruction* 3, 1987: 223–253.

Mandryk, R. L, and K. M. Inkpen. "Physiological Indicators for the Evaluation of Co-located Collaborative Play." *Proceedings of the ACM Conference on Computer Supported Cooperative Work,* 2004: 102–111. Chicago, USA.

Mandryk, R. L., and M. S. Atkins. "A Fuzzy Physiological Approach for Continuously Modeling Emotion During Interaction with Play Environments." *International Journal of Human-Computer Studies* 6(4), 2007: 329–347.

Marsh, T., P. Wright, and S. Smith. "Evaluation for the Design of Experience in Virtual Environments: Modelling Breakdown of Interaction and Illusion." *CyberPsychology and Behaviour* 4(2), 2001: 225–238.

Neversoft. *Guitar Hero 5* [Xbox 360], Activision, 2009. Played May 2010.

Nintendo EAD. *Zelda: Twilight Princess* [Wii], Nintendo, 2006. Played May 2010.

Nintendo EAD. *Mario Kart Wii* [Wii], Nintendo, 2008. Played August 2010.

Pelletier, C., and M. Oliver. "Learning to Play in Digital Games." *Learning, Media and Technology* 31, 2006: 329–342.

Revolution Software. *Broken Sword: The Shadow of the Templars (The Director's Cut)* [DS],2009. Played June 2010.

Ryan, R. M., C. S. Rigby, and A. Przybylski. "The Motivation Pull of Video Games: A Self-Determination Theory Approach." *Motivation and Emotion* 30, 2006: 347–365.

Ryan, W., and M. A. Siegel. (2009) "Evaluating Interactive Entertainment Using Breakdown: Understanding Embodied Learning in Video Games." Proceedings of DiGRA' 2009 London, UK.

http://www.digra.org/dl/db/09287.38300.pdf (accessed Dec 2012)

Santa Monica Studio. *God of War III* [Playstation 3], Sony Computer Entertainment, 2010. Played June-July 2010.

Treyarch. *Call of Duty: Black Ops* [Multiple platforms], Activision, 2010.

Sharples, M. "Methods for Evaluating Mobile Learning." In *Researching Mobile Learning: Frameworks, Tools and Research Designs*, edited by G. N. Vavoula, N. Pachler, and A. Kukulska-Hulme, 2009: 17–39. Oxford: Peter Lang Publishing Group.

Stake, R. E. "Case Studies." In *Strategies of Qualitative Inquiry*, edited by Denzin and Lincoln. 2nd ed. London: SAGE Publications, 2003: 134–164.

Stuart, K. *Guardian* gamesblog, 2010. http://www.guardian.co.uk/technology/gamesblog/2010/nov/11/games-pc (accessed Aug. 2012).

Squire, K. "Open-Ended Video Games: A Model for Developing Learning for the Interactive Age." In *The Ecology of Games: Connecting Youth, Games, and Learning,* edited by K. Salen. Cambridge, MA: MIT Press, 2008: 167–198.

Sumo Digital. *Doctor Who: The Adventure Games* [PC download], BBC Wales, Free UK version, 2010. Played July 2010.

Thatgamecompany. Flower [PS3], Sony Computer Entertainment, 2009. Played July 2010.

Traveller's Tales. *Lego Indiana Jones 2: The Adventure Continues* [Wii], LucasArts, 2009. Played May-June 2010.

Vavoula, G., M. Sharples, E. Scanlon, P. Lonsdale, and A. Jones. (2005). (2005). Report on Literature on Mobile Learning, Science and Collaborative Activity. Kaleidoscope Network of Excellence. Deliverable D33.2.2, Mobile Learning in Informal Science Settings. http://halshs.archives-ouvertes.fr/view_by_stamp.php?&halsid=offkbt0u1u5n8roc942pav4f93&label=SHS&langue=fr&ac-

tion_todo=view&id=hal-00190175&version=1 (accessed Aug 2012)

Yin, R. K. *Case Study Research: Design and Methods*. SAGE Publications, California, USA., 2009.

Zygna. *Farmville.* [Social network browser game], Facebook, 2009. Played May-June 2010.

Beyond the Digital Divide: An Ecological Approach to Game-Play

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Introduction

It appears that digital games present a number of significant problems as artifacts for intellectual analysis. A great deal of effort has been invested in attempts to define *digital game* and to position these games historically in relation to text, media, play, literature, drama, and other categories. Are we to understand games as related to other screen-based media and place them in the same media ecology as movies? Are they thus historically related to theatre and drama? Can we see digital games as a form of interactive television? Does it make more sense to place digital games in a broader framework of studies on play? Are digital games related to sports, and, if so, in what way? The field of studying games sometimes also describes its own historical roots in terms of the so-called ludology-narratology debate. This discussion has involved the status of stories in digital games and questioned whether rules or fiction should be the appropriate unit of analysis for understanding them (see Eskelinen, 1999; Frasca, 2003; Pearce, 2005; Murray, 2005).

How a scholar chooses to position digital games has consequences for what can be seen as relevant research questions, appropriate methods, and whether or not the results of a given study are a true contribution to our understanding. For example, framing video games as 'media' will make the game a vessel for some 'content,' and emphasis will be on how the game mediates a certain theme. A game like *The Sims*

(Maxis, 2000) would in such a framework be comparable to TV soap operas and could be discussed from the standpoint of how other media and commercials have an impact on socialization. Such a framework would also position the user of the game as a *consumer/observer*. Framing video games as toys, i.e., material for play, will make *The Sims* comparable to a dollhouse, for example, and place game studies in a long tradition of studies on play. In this framework, the user would be positioned as a *player*. Framing *The Sims* as a design tool will emphasize creative aspects and depict the user as an *author/ designer*. It is thus crucial to question how the academic community frames games. To use Wittgenstein's terminology (1953, § 65–71),we need to pay attention to what kind of "family resemblances" we ascribe to various games. Some frameworks will highlight specific features of games but hide or trivialize others.

For instance, the division of games into the categories *digital* and *non-digital games* makes us think in specific ways about games as a whole. For example, the literature about games, learning, and education can be seen as being divided into two traditions. Whereas the *International Simulation and Gaming Association* (ISAGA) has a long history of viewing gaming as an instructional approach that can be used with or without digital technology (e.g., Booth-Sweeney and Meadows, 1995; Thiagarajan, 2003), the more recent discussions about *serious games* and *gaming literacies* are associated with the field of educational technology (Gredler, 1996; Shaffer, 2007; Gee, 2003, 2005, 2007). Ideas about games and learning then become associated with ideas about using technology in schools, and the educational value of games is seen in relation to features like multimodality, visual realism, and interactivity. Other aspects, such as what it means to interact with *rules*, are then easily overlooked.

The distinction between digital and non-digital games is in many ways institutionalized. The multidisciplinary game research community,

Digital Games Research Association (DiGRA), for example, has this distinction built into its title. Yet the community as such embraces the study of any form of games, a fact implicit in its use of the term *non-digital games* for specific tracks in its conferences. While the distinction digital/non-digital, from a historical and technical perspective, certainly is useful, it can be argued that the recent trend toward pervasive digital technology makes framing the study of games and learning on the basis of the technology that is used seem dated. Is it relevant for the game experience if a game contains some form of digital technology? Consider, for instance, the toolkits for board games and tabletop role-playing games. These toolkits are in the form of applications for tablet computers or smartphones and are supposed to help players manage the complexity of some of the games. For example, the board game *Arkham Horror* (Lauinius and Wilson, 2005), a rather complex game with many cards in different categories and several submechanisms, has a toolkit that, among other things, replaces some of the drawing decks in the game. Might it not be that "digital" and "non-digital" are rather blunt instruments for discussing games? With pervasive digital technology around us, will it make sense to single out games on the basis of the technology they employ?

Instead, it might be fruitful to explore other forms of family resemblances among games that do not take into account the specific technology used in the games. Projects with an academic interest in game mechanics have approached games in this way. In the *Gameplay Design Pattern Project* (Björk and Holopainen, 2005a, 2005b; Holopainen and Björk, 2008), as well as the *Game Ontology Project* (Zagal et al., 2005; Zagal, 2008), game mechanics are discussed without excessive emphasis on the kind of technology employed in the games. The emergence of journals like *International Journal of Role-Playing* (http://journalofroleplaying.org/) also points toward classification of games that overrides the digital/non-digital distinction (see Hitchens and Drachen, 2008). In this article, I concur with these ways of approaching games.

Aim of This Article

The purpose of this article is to discuss the issue of digital versus non-digital games. I want to sketch a framework in which games are classified on the basis of their game-play rather than the material they employ. This means that such odd entities as sports, puzzle games, board games, and video games can be discussed with the same concepts. In order to do this, I outline how one can look at game-play from the perspective of ecological psychology (Gibson and Pick, 2000; Gibson, 1977, 1986; Reed, 1987, 1996). This discipline describes game-play in terms of perceiving and acting in accordance with affordances in games. This approach makes it possible to see new family resemblances among games, based on whether a game challenges the player's ability to *perceive* affordances or the player's ability to *use* affordances. The ecological approach to game-play thus takes a cross-section through attempts to classify games based on the kind of technology they employ.

Methodological considerations

This article is a strictly conceptual contribution, with no other empirical sources than the author's own game experience. It might seem a bit unusual to talk about *methodology* with such an approach. But it is true that the field of game studies has spent considerable time on the process of defining games and game-play (see for example Juul, 2003; Salen and Zimmerman, 2004). Mine is another account in this tradition of theoretical articles; and for this reason I would like to point out an epistemological concern of my own. I do not see the value of theory in its relation to an objective world of "things," but rather in how a theory can illuminate and describe something in a powerful way (Säljö, 2009, p. 204). The claims I make in this article rest on the ecological approach to perception, action, and learning, and should be read from this point of view. Whatever discussions there may be between ecological psychology and other approaches, for example cognitive psychology, this is not the place to pursue them.

AN ECOLOGICAL APPROACH TO GAME-PLAY

The Concept of Affordance

The theory of ecological psychology is mainly known from James Gibson's writings and the term and concept of *affordance* coined by him (1986, p. 127). The affordance concept was picked up by traditions such as *human-computer interaction* and *interaction design*, where it came to take on a somewhat different meaning from the original one (see Norman, 1998, 1999).

The main idea of *affordance*, as originally developed, is to address the reciprocal relation between humans and the environment (this applies also to animals other than humans; both humans and animals are regarded as perceiving and acting organisms in this theory). The environment contains everything, from buildings and plants to other objects, as well as other humans and animals. These things exist in relation to one another in a layout, a structure of the environment. This layout is constantly changing as events occur and things and people move, change, disappear, etc. At the same time, animals and humans are active organisms interacting with the environment. The environment *offers* the individual different ways of acting. These offers are called *affordances*, and an important part of the original formulation of the concept is that affordances are *relative* to an organism (relative between species as well as between individuals). For instance, a stone can afford being thrown for someone with a hand and arm of certain strength. This affordance is thus relative to the physical constitution, as well as the capabilities, of the organism. Many humans and some apes could use a stone as a projectile, but this affordance is *not* an affordance for an infant or for someone with a disability in the arms or hands.

An affordance is thus always relative to an agent; it is not an objective property of the environment. I find that the most illustrative meta-

phor for conveying the original meaning of affordance is that of an empty space between two fitting jigsaw pieces. The environment must have certain properties in relation to the acting organism, its bodily constitution, and its capabilities.

Although many basic affordances are of such a nature that they can be acted upon by a majority of the animals in a species, there remain individual differences. As Gibson and Pick (2000) point out, for humans, affordances are often an outcome of training. Experts in a certain domain have learned to utilize affordances that are not available to non-experts:

> Humans, at least, must learn to use affordances. Some affordances may be easily learned: others may require much exploration, practice, and time. . . . Further development of expertise may involve learning to realize affordances unavailable to non-experts. A three-inch-wide beam affords performing back flips for a gymnast, but the affordance is not realizable by others; rock climbers learn to use certain terrains for support that do not appear to others to provide a surface of support (2000, pp. 16–17).

Some affordances are thus only realizable (capable of being utilized) by experts in a domain, even if they are recognizable (capable of being seen) by others who lack the skill of acting upon them. I can see that waves on a windy day afford surfing, even if I cannot stand on a surfboard. It is important to notice, though, that being knowledgeable in a domain also means having the ability to perceive more affordances than a novice would. While I can see that the waves afford surfing, I cannot identify properties of the waves for doing certain tricks or judge whether the conditions are safe. Expertise is about both recognizing affordances *and* being able to realize them.

To Discover Affordances

In ecological psychology, the perceptual process is not about decoding messages that are sent to the senses and then enriched with some mental unit (such as schemata or mental models; see Gibson and Gibson, 1955). Our senses are instead seen as being in constant contact with information about the environment. For vision, this means that our eyes are in constant contact with the light that surrounds us. This light is structured in accordance with the layout of the environment (and the sources of light), creating what in this theory is called an "ambient optic array" (Gibson, 1986, pp. 65–92). When events take place in the environment, some things in the optic array change, while others do not. Over time, light is thus structured as having variant and invariant properties. Visual perception is about making distinctions in this flow of structural change that happens in the ambient optic array. This idea might seem abstract, and it is somewhat counterintuitive to think about perception without stimuli being enriched by anything. A parable might be informative here. When you are swimming in a pool or a lake and someone jumps in close to you, you can sense this fact on your skin even though that person has not touched you. What you feel is a structural change in the water; i.e., you differentiate between the sensation of calm water and that of water moving over your skin. So, just as we are immersed in water when swimming, we are, in everyday life, immersed in light.

The ecological approach rests on strong anti-cognitivist assumptions. It rejects the existence of mental schemata and the computer metaphor of an information-processing mind. Instead, a basic assumption of this theory is that learning and perception constitute a process of *differentiating* and making distinctions. It rejects the idea of perception as a process of *enriching*. We do not add mental schemata to stimuli in order to make sense of the world; we make sense of the world by becoming attuned to our environment, being able to make finer distinctions

(Gibson and Pick, 2000). The fundamental function of perception, then, is to pick up information about possible ways of acting in the environment. In other words, we look for affordances.

Just as we must learn to utilize some affordances, we also must learn to discover affordances by cultivating our perception. Experts in a given domain are able to perceive things in their surroundings that remain invisible to novices. A trained soccer player can see opportunities that someone who is not familiar with the rules of soccer would not see. For example, only a skilled player who is attuned to making the necessary distinctions can see the possibility of luring the opposing team into an offside trap. Acquiring the ability to discover specific affordances is called *perceptual learning* in the ecological approach (Gibson and Pick, 2000).

Perception and action

This theory presumes that perception and action are closely related as different functions of an ecological system. Here, perception is the process by which we perceive the environment, while action refers to our engagement with objects, events, places, animals, and other humans, as these are part of our environment. Yet some actions, like moving one's own body in order to see better or moving objects that are in the way of our visual field, are performed with the purpose of gaining information about the environment. We take actions in order to perceive what our world around us can afford, and we act upon these affordances, sometimes in ways such that new possibilities open up for us. Action is thus also the means by which we change things in the world; i.e., we not only interact with predetermined conditions, but are also capable of changing the conditions of our world (Gibson and Pick, 2000; Gibson, 1977, 1986; Reed, 1996). Another important point in this theory is the need to distinguish between two different aspects of actions. Actions have both exploratory/information-gathering aspects and performatory/executive aspects.

The *exploratory* aspect of actions is concerned with acquiring knowledge about the affordances of the specific situation. The *performatory* aspect of action is concerned with realizing affordances that have already been discovered (Gibson and Pick, 2000, p. 21).

> Perceiving and acting go on in a cycle, each leading to the other. Perception occurs over time and is active. Action participates in perception. Active adjustments in the sensory system are essential. But action itself may be informative, too. . . . Actions have consequences that turn up new information about the environment. . . . All actions have this property; but it is useful to distinguish *executive* action from action that is *information-gathering.* (Gibson, 1991, p. 601).

Thus, in a sense, action always reveals information about affordances; but it is useful to make some distinctions. As Gibson (above) points out, it is important to recognize that some actions are performed with the purpose of gathering information. As stated above, another important feature of action is that some actions *change* the affordances of a situation; i.e., we must consider affordances for changing affordances. For example, most adult humans are able to carry a ladder. To carry a ladder to a certain place is to use one affordance the ladder has for an adult, its property of being movable. The goal of the activity is not to carry the ladder as such, but to place the ladder in order to then climb it and reach a certain place. Thus, carrying is here an action taken to change the affordances of the environment, making a specific elevated place reachable. We use some affordances in a situation in order for other affordances to emerge. Thus, the environment can be said to have affordances for gaining other affordances. We not only adapt the environment; we also reveal information about affordances through action:

> Executive actions, such as reaching, grasping, and locomotion, have their own role in perceptual and cognitive devel-

> opment because they change the affordances of things and places[,] providing new occasions for information-gathering (Gibson, 1991, p. 601).

One way to gain new affordances in a situation is to use tools. By using a tool, some animals can extend their capabilities and realize new affordances (see Linderoth. 2010). Humans are superior to other species as tool users, and the whole history of technological development can be seen as a way of changing what the environment affords us.

Game-play and affordances

The ecological approach, as a general theory of perception, action, and learning, can be useful in the analysis of game-play. This theoretical framework offers concepts that can point us toward interesting discoveries. The affordance concept has already been used to discuss games and game-play (Linderoth, 2010; Linderoth and Bennerstedt, 2007; Rambusch, 2010; Gee, 2003, 2007). In this article, I join in this discussion and attempt to show that the difference between *discovering* affordances and *using* them can be a fruitful distinction to make as an approach to game-play.

Game-play and the exploratory aspect of action

As has been stated, actions have an information-gathering aspect, since they can reveal new affordances. Gibson and Pick (2001) point out that it is relevant to recognize actions whose goal is to discover affordances—what they label *exploratory* actions. Exploratory actions can be observed in numerous and varied instances of game-play. Consider the following examples.

A *pool* player walking around the pool table before making the shot, calculating angles, trying to predict how the balls will bounce, and so forth, can be described as taking exploratory actions. S/he is trying to find appropriate affordances in the situation.

A player of a third-person video game moving the in-game camera around when looking for enemies, power-ups, paths to take, etc., is taking exploratory action. A similar example would be a player of a side-scrolling game like *Little Big Planet* (Media Molecule, 2008) or some of the games in the *Lego* series, which moves the game character for the purpose of making the screen scroll and reveal new parts of the game world (see Linderoth, 2010, for an example of how side-scrolling in *Lego Indiana Jones 2* (Traveller's Tales, 2009) can be seen as an exploratory action).

A *soccer* or *hockey* player holding the ball or puck for a moment while looking over the playing field is searching for opportunities to make a pass.

A player of a board game like *chess*, who leans over the table, is trying to get an overview of the game state in order to find different opportunities for the next move.

A player of an adventure game like *Escape from Monkey Island* (LucasArts, 2000) who scrolls the mouse pointer over the screen in order to see if parts of the screen are highlighted, i.e., offer some form of interaction, is also taking exploratory action.

These are just some examples of game-play situations in which the player is active in finding information about affordances of the situation. In some fast-paced games like multiplayer shooters or tennis, it might be harder to observe specific actions as being *exploratory*. Yet, as Gibson and Pick (2001) point out, all actions have the prospect of revealing information about affordances even if they are not taken explicitly for this purpose. Moving in a multiplayer shooter in order to capture a flag or a spawn point will reveal obstacles on the way, and the player will discover affordances while moving. Expert gamers and professional athletes have learned to differentiate among all the

available information in a situation so that they perceive the affordances that are relevant in relation to the game they play and the specific game state.

Game-play and the performatory aspect of action

Some of the affordances that the player discovers during game-play will be acted upon. The player takes these performatory actions in order to achieve something in relation to the challenge that the game presents. Some actions will have a direct effect on winning or losing the game, achieving the personal goals that the player has set up. Shooting a puck or ball against a goal, attacking other players in multiplayer shooter games, jumping over some obstacle in a platform game, playing the highest card in a trick-taking card game, and so forth are all performatory actions taken directly against some goal. Many of the actions a player engages in during game-play have a *transformative* aspect, in that they can create new opportunities for other actions. The player can change things in a situation so that new affordances appear.The point here is that the player takes actions to *create* new affordances, not just to discover them through exploratory actions. Examples would be:

Positioning oneself on the soccer field or hockey rink in order to afford being able to receive a pass from another player. The constant movement of players in these games will present an ongoing flow of coming and going affordances, which the players try to control with their actions.

Taking cover and positioning the avatar in multiplayer shooters is also about changing what affordances the situation has for the acting player and the other players.

In a platform game like *Little Big Planet* (Media Module, 2008), crates can be moved in the game world; by placing them on certain spots, the

player can jump on them and reach new parts of the game environment.

In some board games, the units can be upgraded; for example, in *Shadows over Camelot* (Cathala and Laget, 2005), players can heal their units and get back health points by skipping a turn. In chess, moving a pawn to the opposite side of the game board upgrades that piece to a queen, a move that radically alters the affordances in the game.

In some video games, the dynamics of affordances change when a player changes avatars. In games from the *Lego* series *Lego Star Wars*, Lego Batman [Traveller's Tales, 2007, 2008], etc.), only certain characters can do certain things in the game environment. By changing his/her avatar, a player may find that new possibilities open up.

These are some examples of performatory actions that are said to have a transformative aspect because they change the affordances for the player.

An ecological approach to game-play

The theory of ecological psychology game-play can be described as follows. *To engage in game-play is to perceive, act on, and transform the affordances that are related to a game system or to other players in a game*. The player needs to handle a constant flow of opportunities for action as they come and go. Players perceive affordances through exploratory actions and act on affordances with performatory actions. The performatory actions that a player executes often transform the specific affordances the situation will contain. Two examples from the author's gaming experience can illustrate how game-play can be approached from the ecological perspective.

Example 1: Scrabble

During a typical game of *Scrabble* (Mosher Butts, 1938), I was looking at my letter tiles and also at the game board in order to find a good place to lay my tiles and form a word. I had just drawn some tricky

letters and had no vowels. While waiting for my turn, I discovered an opportunity to get at least two of my letters out and score approximately 20 points. Then, unfortunately, the player before me placed her word on the space I had planned to use for mine. So, instead of placing my letter tiles to make a word, I placed them back in the tile bag and drew some new ones.

Here, actively looking for available places to make words can be understood as exploratory actions. The game board and the letters I have available are the environment at hand. Trying to find a good move is the active search for affordances that will generate a high score. The performatory action of another player, placing tiles on the game board, transforms the available affordances, closing and opening up possible actions for me. The other player has altered the environment and thus changed what the situation affords. Throwing the tiles back into the bag and taking up new ones is a performatory action in which the player transforms her or his affordances in the game state; in other words, the new tiles in my hand are also an alteration of the environment.

Describing how we make decisions in a board game as a *perceptual process* might seem strange to a reader who is not familiar with ecological psychology: we easily think of this as a form of inner simulation, in which we imagine different scenarios. In the ecological approach, perception is an activity whose end goal is to discover new properties of the environment—something that cannot happen through imagination (Gibson, 1986, p. 257). Knowing is thus an extension of perception (Gibson, 1986, pp. 258–259).

Example 2: Trine

Trine (Frozenbyte, 2009) is a 2-D side-scrolling platform video game with both action and puzzles. The player's goal is, as in most games of this genre, to get from point A to point B in each of the game's levels. In single-player mode one can switch between three different charac-

ters: a knight, a thief, and a wizard. They all have different abilities. In one game-play session, I was playing as the thief and reached a chasm that I needed to cross. Examining the screen, I saw a small ledge on my side of the chasm. Jumping down to the ledge made the screen scroll down and reveal that at the bottom of the chasm there was just a floor, and not deadly lava or spikes, as there had been in other cases. Moving across this floor revealed a number of crates that I had to jump over. On the other side of the chasm there was a scarp so I could not get back to the surface. Since this scarp could not be climbed or jumped, I changed character to the wizard, whose special ability is to manipulate objects in the game world. I used the wizard to lift and stack the crates on top of each other so that they formed a rough flight of stairs, creating an opportunity to back to the surface. But before I was done, the wizard's magical energy became depleted and I could not finish. I started to move back into the chasm to look for other paths across it. Then the game made the sound of enemies appearing. I immediately changed to the warrior, who is the game's only character with close combat fighting ability. Some skeleton enemies charged my warrior, and I defeated them. One skeleton was shooting arrows at me from the top of the wall. I changed to the thief, who has a bow and arrow for ranged attacks, and defeated this skeleton as well. One skeleton had dropped a blue energy vial, which I picked up. Now my wizard had some energy again and could finish building the stairs. By jumping from crate to crate, I was able to back to the surface and continue along the level.

Scene from the game *Trine*.

We can describe and analyze this example using concepts from the ecological perspective. Moving down to the ledge was an information-gathering, exploratory action, taken in order to reveal what the bottom of the chasm afforded. Moving across the floor of the chasm was a performatory action, yet it revealed information about the existence of the crates and the wall. Changing to the wizard was a way of gaining the affordance to stack the crates, which was an action taken in order to gain the affordance of making the wall passable. Running out of energy was an event that transformed the affordances, so the wizard was no longer able to lift the crates. Moving back into the chasm had the purpose of finding information about other paths, i.e., other affordances for passing the chasm. Being perceptually attuned to the game meant that the sound of appearing enemies was enough information to make me perceive the affordance of threat and take the performatory action of changing to the warrior. Defeating the enemies and picking up the vial they dropped transformed the game state and the available affordances. The threat of being defeated had disappeared, and once again there was an affordance for building stairs.

These examples illustrate how game-play can be seen as a flow of affordances that come and go and that the player perceives, acts on, and transforms. It is a constant interplay of reciprocal exploratory and performatory aspects of action.

Can the Concept of Affordance Be Used in Relation to Socio-Cultural Learning?

It should be noted that Rambush and Susi (2008) have argued that James Gibson's theory cannot be applied to digital games in the way I suggest here. By making a bricolage of selected references from design and cognitive science, together with James Gibson's magnum opus *An Ecological Approach to Visual Perception* (1986), Rambush and Susi (2008) aim to set straight other researchers' misinterpretations of the concept of affordance.. Their main argument is that affordance falls

short of explaining interaction with digital games, since gaming requires socio-cultural learning in specific contexts. Features in a digital game cannot, according to these authors, be seen directly, since the activity presupposes that the gamer draws upon some form of cultural experience. Rambush and Susi invent the term *virtual affordances* for the information on the screen and make a sharp analytical separation between the real physical setting and the game. To talk about affordances in a digital game, as I do in this article, is, according to Rambush and Susi, a deviation from James Gibson's original concept.

It is somewhat ironic that their article is written with the intention of setting other researchers' interpretation of James Gibson's theory straight. Rambush and Susi's separation between biology and culture, as well as between virtual and "real," is exactly the kind of dualistic model that the theory was formulated to oppose. These claims are possible to make only because the authors disregard a fundamental aspect of the ecological approach, namely, that information about affordances is to be picked up in the *light* surrounding the actor/observer (Gibson, 1986, pp. 47–92). A screen is always part of the gamer's visual field (the ambient optic array), and so is everything around it. It is in this full field of information that we perceive affordances; in other words, "context" is always part of perceiving affordances. By simply looking at a car, one cannot extract the affordance of collision; it is when we have the perceptual information of a moving car approaching at high speed toward our point of observation that we recognize the affordance of an accident. Neither is it just from watching the screen that we see different affordances in a game: the edge of the screen, the sensation of sitting in a chair, the feeling of the keyboard against one's fingers, are all ecological information from which we extract very real affordances. James Gibson was clear that his theory includes both culture and learning:

> This [the altered environment] is not a new environment—an artificial environment distinct from the natural environ-

> ment—but the same old environment modified by man. It is a mistake to separate the natural from the artificial as if there were two environments. . . . It is also a mistake to separate the cultural environment from the natural environment, as if there were a world of mental products distinct from the world of material products (p. 130).

Picking up information, cultural or natural in origin, sometimes presupposes that we have become perceptually attuned to the information. "If the affordances of a thing are perceived correctly, we say that it looks like what it is. But we must, of course, learn to see what things really are" (p. 142).

The fallacy of Rambush and Susi's analysis lies in the fact that their argument is made like a quilt of disparate references that does not acknowledge James Gibson's legacy in the field of ecological psychology. In the later works about perceptual learning by James's wife, Eleanor Gibson, it is evident that affordance is a concept that covers the human socialization of cultural values as well as domain-specific knowledge (see Gibson and Pick, 2001, pp. 21–25). This was also evident, though not specifically addressed, in the original formulation of the theory. When James Gibson (1986) discussed the affordance concept in relation to gestalt psychology, he took the affordances of a letter-box as an example: "the real post box (the only one) affords letter-mailing to a letter-writing human in a community with a postal system" (p. 139). With this example in mind, it is really hard to argue that socio-cultural learning is not accounted for in in Gibson's original formulation. It thus makes perfect sense to claim that: the screen and the keyboard afford gaming to a game-playing human in a community with digital games.

CONCLUSION: EXPLORATORY AND PERFORMATORY CHALLENGES

The ecological approach is a theory of perception, action, and learning that has as its primary units of analysis the opportunities and constraints that the environment provides for humans and other animals. It makes a distinction between the capability of perceiving opportunities and the ability to use them. This distinction between the exploratory aspect and the performatory aspect of action opens up for us new ways of thinking about games. Games can be seen as challenging either the exploratory aspect of action or the performatory aspect of action. This is not a framework that makes a clearcut distinction between two separate categories of games; games can challenge both aspects, and in some cases it can be hard to see one aspect as being more challenging than the other. What I suggest is a framework in which the challenges in games can be seen as having an emphasis on either *perceiving suitable actions* or *performing suitable actions*. This is not to be understood as a simple physical-versus-intellectual dichotomy. Perception is, according to the ecological approach, embodied action.

It also is important to note that I here refer to the *designed challenges* in games. Just as any situation can present challenges to an agent, gameplay can be challenging in a number of ways that have nothing to do with the built-in challenge that the game designer aimed to present. For a disabled person, it is challenging to hold a controller, yet this is not the challenge that the designer wanted to present to the player. In some game groups, rules discussions and social climate can be utterly challenging, forcing the player to perceive and act on a number of affordances that the designer never intended (taking into account that other players will react in a certain way and we will moderate our own interaction in accordance with this). Yet this kind of social tension can, of course, also be designed into the system in games of negotiation. When talking about games as emphasizing either exploratory

or performatory challenges, one must do so in relation to the specific ways the system is designed to be challenging. Since interaction is organic and unpredictable, there will, of course, be situations in which the actual game session deviates more or less from the designer's intentions. The affordances of the game system and all other affordances available to people interacting with each other will merge. What counts as "following the rules" can thus be subject to local traditions, but in general the participant will see clearly which actions afford continuing the game and which actions afford the collapsing of the game session.

Exploratory Challenges

Games with an emphasis on *exploratory challenges* are described as: games in which the designed challenge is for the assumed player to know what actions to take, but executing these actions is expected to be more or less trivial.

Clear examples of games with an emphasis on *exploratory challenges* would be most board and card games like *chess* and *poker*. Under this category we can also place many digital simulation games and strategy games like *SimCity* (Maxis, 2000) and *Civilization* (Meier, 1991), as well as digital and non-digital puzzle games. In these games the challenge for the player lies in perceiving the rewarding affordances in a complex cluster of possibilities. The actions tied to these affordances, once they are perceived, are trivial for the player to execute. Drawing a card, rolling a die, clicking on something in a menu, placing a tile, and so forth are all actions that can hardly be seen as challenging.

Backseat gaming

Since the actual challenge in these games lies in perceiving affordances, not in the execution of them, there can be cases in which many persons share the position of player. Exploratory challenges can be shared, for instance, in puzzles and simulation games. While one player might

be in control of the mouse or control pad, or formally have a player position in a board game, these games allow other people to take part in the challenge even though they have no agency to execute actions in the game. This kind of *backseat gaming*—i.e., someone who formally is not a player in a game taking part in discovering affordances—can, of course, occur in games with an emphasis on performance as well. The point here is that when the challenge of a game is exploratory, persons next to the formal player can in fact have just as much, and in some cases even more, influence on the game. The whole issue of what I here call backseat gaming needs to be further explored. It might be a task for future research to investigate the pleasures of backseat gaming, as well as to what degree the person next to the player takes part in the game.

Performatory Challenges

Games with an emphasis on *performatory challenges* are descibed as: games that are designed so that knowing what actions to take is straightforward and obvious, but performing these actions is supposed to be challenging for the assumed player.

Examples of games with an emphasis on *performatory challenges* would include most sports. In track and field events like *pole vault, high jump,* and *hurdling,* the challenge is not to know what to do; it is to do it better than all the other competitors. The same goes for many video games in the multiplayer shooter genre such as *Counter-Strike* (Counter-Strike Team, 2000) or *Call of Duty* (Activision, 2007). The challenge lies in being good at using the affordances in different situations, so as to be faster and aim better than the opponents. Many other video games, such as racing and platform games, have the same property. The kind of board games that sometimes are called dexterity games will also be found in the family of games with an emphasis on performatory challenges. Games like *Jenga* (Scott, 2006), *Jackstraws,* and *Pitch Car* (du Poël, 1995) are challenging to the performatory aspects of action. *Table soccer, rod hockey*, *air hockey,* and *pinball games*

are also rather straightforward when it comes to perceiving what to do, but they challenge the player's performance.

It should be noted that games with performatory challenges also are demanding in terms of exploratory aspects of actions. A professional soccer or *Counter-Strike* player has a lot of expertise that has to do with perceiving affordances. Seeing and choosing affordances is not supposed to be an explicit challenge in these games, but something that adds to the player's skill. When we say that a soccer player is good at "reading the game," it is the soccer player's exploratory ability that is addressed. Yet, unlike the situation in a game with exploratory challenges, it is not enough to be able to see what would be a good move/action; a good game reader with no ball control would not be a competent soccer player. In many games with performatory challenges, the exploratory aspect of action is considered to be a separate domain. Sometimes this knowledge is connected with a person who is not in the actual game, yet is allowed to aid players with exploratory aspects of action, as a coach or a trainer. This is a crucial difference from games with exploratory challenges. While a chess or poker player might have a coach or trainer, it would probably be considered cheating if these players took advice from them in the middle of a game. In games with performatory challenges, it is not a problem if a coach shouts out advice to the players in the middle of the game.

Another important thing to note here is that actions are deemed trivial or challenging for an *assumed player*. By this I mean that some disabilities can make actions like holding cards or rolling dice a challenge, yet this is not the challenge that the designer of the game had in mind. Most board games are designed for someone without disabilities. It is important to keep in mind that affordances are always a relation between the capabilities of an agent and her or his immediate environment (Gibson, 1986). In the Paralympics and Special Olympics, one can find many games that illustrate the importance of always having

an assumed player in mind before stating what is challenging or not in a game.

DISCUSSION: BEYOND THE DIGITAL DIVIDE

The main idea in this article has been to describe game-play as the process of seeing, using, and transforming affordances: a way of explaining game-play that entails an understanding of challenges in games as being either about perceiving and choosing affordances or about using affordances.

This framework can be used to highlight many different issues in the field of game studies. It opens up discussions about the relation between game studies and sport studies. It shows how certain board games, so-called dexterity board games, have a different structure from that of more traditional board games. It provides concepts for discussing differences and similarities among *game room/recreation room games* like air hockey, pinball, and arcade games. These are all matters that can be fruitful to explore in the future. The focus here has been on how the ecological approach to game-play overrules classifications of games that are based on the kind of technology the games employ.

As I have stated, the aim of this article is not to get rid of the distinction between digital and non-digital games. This division certainly is useful from a historical and technical perspective. But in our attempts to understand game-play and the ways in which people interact with a game, it might be misleading to ascribe a special status to digital games.

The skeptic might object and point out that most digital games are virtual because they take place on a screen, and that this is a crucial difference from games taking place in the real world. From an ecological approach, there is no ontological difference between the information obtained from a screen and that obtained from the so-called real world. Information about affordances can be found in the perceptual

field and discovered by someone even if the source of information is on a screen (Linderoth and Bennerstedt, 2007). Most video games are controlled with some kind of tool, like a mouse or control pad, that extends the player's agency into the realm of the game. But this kind of extension of agency "into" a game's realm cannot be seen as an outcome of digital technology. Consider, for instance, pinball games and claw machines, where the player uses control mechanisms in order to have agency in the "realm" of the game. This kind of extended agency, using tools for performatory actions, is certainly worth studying, but seeing it as something unique for "digital" technology might be misleading.

The skeptic might also point out that digital games restrain possible actions to the legal moves in a game (see Juul's 2003 critique of Bernard Suit's game definition). Still, this does not mean that everything that is *possible* in a digital game is allowed by the rules. Consider for instance the phenomenon of spawn killing in multiplayer shooter games or the case of using hacks, exploits, and cheating.
The recent development of pervasive digital technology and ubiquitous computing also challenges our understanding of what it means to interact with computers. Smartphones and tablet computers have already become everyday technology, and the field of pervasive games is expanding (Montola, Stenros, and Waern, 2009). It seems fair to assume that labeling a game as "digital" some years from now might seem just as outdated as labeling *light* as being "electrical", *sound* as being in "stereo," or *pictures* as being in "Technicolor." In order to be prepared for such a change, it might be important for the field of *game studies* as well as for organizations like DiGRA to look into their reliance on the dichotomy of digital versus non-digital games.

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BIBLIOGRAPHY

Activision Call of Duty 4: *Modern Warfare.* [PS3], Activision: Los Angeles, CA, 2007.

Björk, S., and J. Holopainen. *Patterns in Game Design*. Hingham, MA: Charles River Media, 2005a.

Björk, S., and J. Holopainen. "Games and Design Patterns", in *The game design reader: A rules of play anthology,* K. Salen and E. Zimmerman (eds.). MIT Press, Cambridge MA, 2005b, pp. 410-437.

Booth-Sweeney, L., and D. L. Meadows. *The Systems Thinking Playbook: Exercises to Stretch and Build, Learning and Systems Thinking Capabilities*. Sustainability Inst.: Hartland WI, 1995.

Cathala, B., and S. Laget. *Shadows over Camelot*. [Board game], Days of Wonder: Paris France.

CounterStrike Team *Half-Life: Counter-Strike*. [PC, Online game], Sierra Entertainment: Kirkland WA.

du Poël, Jean. *Pitch Car.* [Board game], Lautapelit.fi: Helsinki Finland, 1995.

Ehrmann, J., C. Lewis, and P. Lewis. "Homo Ludens Revisited" *Yale French Studies* vol. 41, 1968, pp. 31–57.

Eskelinen, M. "Towards Computer Game Studies" *Digital Creativity* vol. 12, no. 3, 2004, pp. 75–183.

Frasca, G. "Ludologists love stories, too: Notes from a debate that never took place", in Copier, M. and Raessens, J. (eds.), *Level*

Up Proceedings of DIGRA (Utrecht University, the Netherlands, November 2003), pp. 92–99.

Frozenbyte Trine. [PS3], *Nobilis*, Helsinki Finland, 2009.

Gee, J.P. *What Video Games Have to Teach Us About Learning and Literacy.* Palgrave Macmillan, New York, 2003.

Gee, J.P. *Why Video Games are Good for Your Soul.* Common Ground Publ., Altona NY, 2005.

Gee, J.P. *Good Video Games and Good Learning: Collected Essays on Video Games, learning, and literacy.* P. Lang, New York, 2007.

Gibson, J.J., and E. Gibson. "Perceptual learning: differentiation or enrichment?" *Psychological Review* vol. 62, 1955, pp. 32-41.

Gibson, E.J. "Exploratory behavior in the development of perceiving, acting, and the acquiring of knowledge", in An odyssey in learning and perception, edited by E.J. Gibson. MIT Press, Cambridge MA, 1991, pp. 599-606.

Gibson, E.J., and A.D. Pick. *An Ecological Approach to Perceptual Learning and Development.* Oxford University Press, New York, 2000.

Gibson, J.J. "The theory of affordances", in *Perceiving, Acting and Knowing: Toward an Ecological Psychology,* R.E. Shaw and J. Bransford (eds.). LEA, Hillsdale NJ, 1977, pp. 67-82.

Gibson, J.J. *The ecological approach to visual perception*. LEA, Hillsdale NJ, 1986.

Gredler, M.E. "Educational games and simulations: A technology in search of a (research) paradigm", in *Handbook of research for educational communications and technology: A project of the Association for Educational Communications and Technology,* D.H. Jonassen (ed.). Macmillan Library Reference, New York, 1996, pp. 521-540.

Hitchens, M., and A. Drachen. "The many faces of role-playing games", in *International journal of role-playing* vol.1, no. 1 (2008), pp. 3–21.

Holopainen, J., and S. Björk. "Gameplay design: Patterns for moti-

vation", in *Games: Virtual Worlds and Reality,* Selected Papers of ISAGA 2008 (Kaunas, Lithuania, July 2008).

Juul, J. *Half-real: video games between real rules and fictional worlds.* Ph.D. dissertation. IT-University of Copenhagen, 2003.

Launius, R., and K. Wilson *Arkham Horror.* [Board game], Fantasy Flight Games: Roseville MN.

Linderoth, J. "Why gamers don't learn more: An ecological approach to games as learning environments", paper presented at Experiencing Games: Games, Play and Players, Nordic DIGRA (Stockholm, Sweden, 2010). Available at www.digra.org/dl/db/10343.51199.pdf

Linderoth, J., and U. Bennerstedt. "This is not a door: An ecological approach to computer games", in *Situated Play*, Proceedings of DIGRA 2007, Tokyo, Japan 2007, pp. 600-609.

LucasArts. *Escape from Monkey Island*. [PC],LucasArts, San Fransisco CA, 2000.

Maxis. *SimCity.* [PC], Maxix, Walnut Creek CA, 2000.

Maxis. *The Sims*. [PC], Maxis, Walnut Creek CA, 2000.

Media Molecule. *Little Big Planet*. [PS3], Sony Computer Entertainment America, Foster City CA, 2000.

Meier, S. *Civilization: Build an Empire to Stand the Test of Time.* [PC], MicroProse Software, Hunt Valley ND, 1991.

Montola, M., J. Stenros, and A. Waern. Pervasive Games: Theory and Design. Morgan Kaufmann: Burlington MA, 2009.

Butts, M. A. *Scrabble*. [Board game], Alga, Stockholm, 1938.

Murray, J.H. "The last word on ludology v. narratology in game studies", presentation at the DiGRA Conference, Vancouver, June 2005.

Norman, D.A. *The Design of Everyday Things*. MIT, London UK, 1998.

Norman, D.A. "Affordances, conventions and design", in *Interactions* vol. 6, no. 3, 1999, pp. 38-43.

Pearce, C. "Theory wars: An argument against arguments in the so-

called ludology/narratology debate", in *Changing Views: Worlds in Play*, Selected Papers from the 2005 DiGRA Conference, Vancouver, Canada.2005.

Rambusch, J. Mind *Games Extended: Understanding gameplay as situated activity*. Ph.D. Dissertation, Linköping University, 2010.

Rambush, J., and T. Susi. "The challenge of managing affordances in computer game play", in *Human IT* vol. 9, no. 3, 2008, pp. 83-109.

Reed, E.S. "Why do things look as they do? The implications of J.J. Gibson's The ecological approach to visual perception", in *Cognitive Psychology in Question,* A. Costall and A. Still (eds.). Harvester Press, Sussex, 1987, pp. 90-114.

Reed, E.S. *Encountering the world: Toward an ecological psychology*. Oxford University Press, New York, 1996.

Scott, L. *Jenga*. [Board game], Hasbro, Pawtucket RI, 2006.

Shaffer, D.W. *How Computer Games Help Children Learn*. Palgrave Macmillan, Basingstoke UK, 2007.

Säljö, R. "Learning, theories of learning and units of analysis in research." In *Educational Psychologist* vol. 44, no. 3, 2009, pp. 202¬–208.

Thiagarajan, S. and R. Thiagarajan. *Design your own games and activities: Thiagi's templates for performance improvement*. Jossey-Bass, San Fransisco CA, 2003.

Traveller's Tales. *Lego Batman: The videogame.* [Wii], Warner Bros, Burbank CA, 2008.

Traveller's Tales. *Lego Indiana Jones 2: The adventure continues.* [PS3], San Fransisco CA, LucasArts, 2009.

Wittgenstein, L. *Philosophical investigations.* Blackwell, Oxford, England, 1953.

Zagal, J.P., and A. Bruckman. "The game ontology project: Supporting learning while contributing authentically to game studies", in *Proceedings of the International Conference of the Learning Sciences* ICLS, Utrecht, The Netherlands, June, 2008, pp. 499-506.

Zagal, J.P., M. Mateas, C. Fernández-Vara, B. Hochhalter, and N. Lichti. “Towards an ontological language for game analysis”, in Changing Views: Worlds in Play, Selected Papers from the 2005 DiGRA Conference, Vancouver, Canada 2005. Available at http://www.digra.org/dl/db/06276.09313.pdf

Replacing Preconceived Accounts of Digital Games with Experience of Play: When Parents Went Native in *GTA IV*

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INTRODUCTION

In spite of persistent warnings of the "holding power" games have over children (Turkle, 1984, p. 66), it has long been suggested that it is not necessarily the children who determine that they are "bowling alone" (Putnam, 2000), but possibly some parents' insufficient understanding of, and unwillingness to engage with, game cultures (Green et al., 1998). In an interesting and anecdotal online discussion thread entitled "Teaching parents how to play videogames," players' (age unknown) comments included:

> My parents hate videogames [but] they only played them like once EVER.
>
> I tried to teach my Mum Guitar Hero. I had to go Beginner on Slowest Speed, and even then she missed tons of notes. It's truly pitiful =D.
>
> I tried and succeeded. My mom likes Fable 2 and Kirby on DS. She's not very good but she will learn. But my dad will

not even touch the controller (http://forums.sarcasticgamer.com/showthread.php?t=15973).

It was estimated that little direct knowledge of games as a played activity (instead of indirect knowledge of games from media communications, word of mouth, or even viewing of game-play) might be responsible for the misconstruction of the moral and ethical frameworks governing game worlds. This research therefore sought to examine parents' preconceptions of the game *Grand Theft Auto IV* against experiences of, and reactions to, playing the game. As Zagal (2009) has already argued and suggested, actions considered unethical in an out-of-game context may be expected or even demanded while one is playing a game. A good player (of any type of game) may be one who best exploits the opponent's weaknesses or deceives fellow players most effectively. While the concept of media literacy has attracted much discussion within contemporary education literature, it tends to be less evident in the design of attitudinal research methodologies that are employed to chart public perceptions of entertainment-related technological and economic change. When surveyed, the public will often evaluate games rationally, finding their demands immoral or unethical. The current research therefore sought to redress the tendency of legislative-oriented research to shy away from engaging directly with games in its research practices, by assessing how, exactly, parents would interpret and engage with the conditions of a particular game.1

The New Zealand Office of Film and Literature Classification (OFLC) has nevertheless shown continued commitment to ascertaining the New Zealand public's understanding and perceptions of the classification system through research that has observed the degree of knowledge of, and attention given to, the age restrictions put in place to protect the public good from possible injury. Yet in a recent research report published and commissioned by the OFLC, entitled *Public Perceptions of a Violent Videogame* (OFLC 2009), a research design for

audience research is presented that provides an example of how the importance of the experience on offer by games is often misjudged. The 2009 research employed a perception-analysis methodology to record participants' comfort levels with audiovisual clips from *X-Men Origins: Wolverine* (Raven Software), comprised of footage of 1) player-activated game-play and 2) non-interactive cut-scenes. Logic dictates that games are designed to provoke action responses (Drake and Myers, 2006, pp. 608–22) from the player that are not permitted when the player views the text solely as a moving-image clip. As Grodal (2003) states, "Eye and ear will not only be linked to an activation of the premotor cortex [as when solely viewing the text] but also to a full motor cortex and muscle activation" (p. 139). As a result, participant attitudes and beliefs recorded in this research were neither play-derived nor always textually evaluative. Instead, existing critical frameworks for evaluating games eclipsed the specific conditions and experiences offered by the text under investigation.

A potential implication associated with the rise of new forms of literacy (Gee, 2003) is that amongst populations preceding "digital natives" (Prensky, 2009)—i.e., those less familiar with contemporary games—too much emphasis is being placed on the "screen" as the major carrier of the information processed from games. It was postulated that should a user/nonuser distinction emerge, it should carry forward implications for the way in which games are publicly understood, managed, and regulated. The current research thus sought to address the potential shortcomings of the prior research by examining what might be gained from engaging participants more directly in an analysis of the impact and appropriateness of game text by activating and experiencing the text directly through play. Play required participants to act as agents, responding to the conditions of the game environment. A similar request for research of this nature has also emerged from within game studies, as researchers such as Oliver and Pelletier (2005) have also argued that there is a paucity of research generally *detailing* game-play.

METHODOLOGY

This research employed qualitative methods to address, in depth, the degree of *game literacy* expressed by a sample of parents. By observing parents game-play, we found that it was possible to ensure that post-play discussions/analysis was based upon witnessed "performative involvement" with a game. Participants were interviewed both before (on topics that included knowledge of classification as well as managing and determining the suitability of game content for dependents) and after game-play sessions (game-play evaluation). On average, the total participation time, including both observed game-play and pre- and post-interview periods, ran between two and three hours per participant. All participants generally played a game for an hour. It was more common than not for the researcher to end the play session, rather than the participants. Observation of game-play permitted an examination of how the player's semiotic work on the text (when reading and interpreting it) was taken directly from the resources put to use and made available by the text itself. In this way, it was also possible to assess the level of communicative competency and moving-image literacy exhibited by parents—that, in turn, determines the degree of tolerance they hold for games and/or the pleasure they are able to gain from them (Burn and Parker, 2001).

While it is useful to survey general perceptions of, and attitudes towards, interactive game texts, large-scale self-report methodologies do tend to work to the assumption that research participants already possess a *pre-formed* set of ideas, thoughts, and beliefs (Gubrium and Holstein, 2003) that researchers can extract by simply asking questions and recording answers (Cicourel, 1964). This has the effect of limiting the interpretive activity of participants solely to the substance of what they report. To counter this, this research sought to assess general viewpoints on, and preconceptions of, the game medium as against observed experiences and immediate and spontaneous reactions to game-play.

In order to record player experiences, participants were observed with a digital video camera for future referencing. The camera was set up to focus on the game players in order to record any striking nonverbal communication of pleasure or disapproval during play. Indeed, games are often characterized as a "lean forward" medium (as opposed to the "lean back" medium of TV) that creates a gestural space in the space around the screen (Kirkpatrick, 2009). The discourse on pleasure and enjoyment attached to games has, thus far, offered little acknowledgment of the body in its accounts (Niedenthal, 2009), so this research sought to account for a wider range of responses elicited by the games. Secondly, we sought to capture any verbal responses, questions, or comments made during game-play sessions. During play sessions it was also possible to capture and log the on-screen outcomes of player input, collecting files of game-play.

Participants

Twenty parents participated in the study, seven male, thirteen female. The majority of the small sample was Pakeha (New Zealand European) (n = 16), but also included Maori and Pacific Islanders (n = 4). In terms of occupation, the sample contained full-time mothers, individuals in a range of IT-related occupations, those in a variety of educational roles, those in rural and farming-related occupations, and and those in positions in the arts. Nine participants identified themselves as game players, with the remaining eleven declaring no experience or interest in games. However, it must be noted that amongst those who did identify themselves as players during recruitment, it later became apparent during the research that the category of "game player" was being employed rather loosely to refer, in some cases, to past experience with games rather than a more current and active interest in them. Indeed, participants' self-categorisation of their relationship with games and game culture meant that the research included two participants who possessed roughly similar levels of game experience but identified their standing as game players quite differently. Also, in

a number of cases, during observation of game-play, it turned out that the game text and the platform on which it was played (Xbox 360) were just as unfamiliar to some game players as to non–game players.

Initially, early attempts to recruit subjects failed to produce a single expression of interest. An electronically circulated "call for participation" was repeated several times before a decision was made to put a different sampling strategy into action. A sampling technique closer to snowball sampling (more typically employed in studies of "hidden" populations that are difficult to access) was found to be more effective (Heckathorn, 1997). During the process of acquiring informed consent for participation, a certain reluctance to participate in the research became evident. This apparently stemmed from some parents' apprehension about being judged a "bad parent" should they acknowledge little knowledge or understanding of the medium whilst allowing game technology and practices to be present in their home. As one participant stated, "There's a danger it can be seen as an audit." Indeed, before the aims and purpose of the research could be outlined fully to prospective participants, the principal researcher was often required to accommodate confessional accounts of how sons or daughters were engaging with either unknown or age-restricted material.

Game Text

For this research, all participants engaged with the third-person sandbox, action adventure role-play game *Grand Theft Auto IV*, which holds an R18 classification in New Zealand. The choice of text was determined by the OFLC, but its popularity and notoriety ultimately proved useful to the study, as most participants held preconceptions about the nature of the game experience in advance of their engagement with it. It is important to note that participants were not being asked to assess the game in terms of its appropriateness for their dependents. Instead, participants were asked to evaluate their encounter with the game's mechanics and its game world as a designed experi-

ence that evokes reactions and responses from the player.
In asking participants to engage with *Grand Theft Auto IV*, we had to take into account the "sandbox" quality of the game, which gives players the freedom to explore and engage with the game environment, enabling the development of "personal narratives" and/or experience of the "designed narrative" present in the backstory of the main character, the immediate situation, and the missions. The play session was structured so as to acknowledge both the personal and distinctive nature of participants' experience with the game, and also enable comparisons between participants' experience of more fixed features of the game text.

Participants first gained experience of the rules of the game and the objects used in play (which contain special values and have rules attached to them) (Hunicke et al., 2004). "Way points" were set for players to reach first on foot and then in a car. This allowed participants to explore the game environment with a predetermined end-goal. Once these simple tasks were completed, participants were asked to play the mission "Ivan the Not So Terrible," selected for the moral dilemma it presents. In the non-interactive cut-scene for this particular mission, the player sees his/her protagonist and avatar, Niko, in an encounter with Russian crook Vladimir Glebov. Vlad (as he is better known) informs Niko that a man named Ivan is planning to rob his cousin Roman's taxi firm. Niko is therefore directed to go to Roman's cab office to intercept Ivan and prevent the robbery. The implication here is that Vlad wants Ivan dead, and that he is using Niko to achieve this goal. The game then resumes, and as the player arrives at the cab office, Ivan is seen making his getaway. A chase ensues, requiring the player to follow the car some distance before Ivan eventually abandons his vehicle and enters a construction site on foot in a further attempt to lose Niko. The chase continues up ladders and across roofs, requiring the player to leap across buildings, until reaching a dead end. This mission then presents the first life-or-death decision of *Grand*

Theft Auto IV as Ivan, having slipped, is left hanging onto the ledge of a building. The player is prompted to act by a pop-up window that contains reference to action buttons that will allow the player to either kick Ivan off the ledge of the building or help him up. Should the player help Ivan, the player still receives a 100% completion for the mission, as Niko informs Vlad that he will not be seeing Ivan again. Niko also benefits further from saving Ivan, as the grateful NPC reappears later on in the game to give Niko an extra mission.

In playing the "Ivan the Not So Terrible" mission, participants not only applied their new skills, but also witnessed a non-interactive cut-scene that provided them with a feel for the character (Niko), his mannerisms, and his relationship to the individuals he is working for. It also meant that participants experienced the game's dynamics, or run-time behaviour (Hunicke et al., 2004). Another consideration underlying the choice of this mission is the fact that the researchers nominated this mission as one of the most memorable moments of their own experience (together with another few of the seven moral-choice missions in the game). This may be due to the fact that these moral-choice missions are key moments in the game, when the player may feel empowered to exert real influence on the game's story line. Although this mission is perhaps not representative of all the missions in *GTA IV*, it can be considered one of the more important ones that stick with the player after the game ends and is therefore more likely to be representative of the play experience as a whole than the more repetitive tasks of running different types of errands. As Aarseth (2007) puts it, when talking about transgressive play: "The unique . . . play event is what players live for, as they carry out their rather meaningless, repetitive tasks in the service of the game" (p. 133). Once the mission was completed, participants were given whatever remaining time there was in the hour-long session to engage in self-directed play without any further directives.

In order to achieve a sufficient degree of play experience and progress within selected games within the timeframe allocated for play, participants were also paired with, and assisted by, an "expert gamer." This gave participants an option to hand over the game controller, or to turn to another player for advice if they were unsure or stuck. From the perspective of the research design, this was not considered problematic, as collaborative play also allows the person without the game controller to operate as a legitimate peripheral participant (Lave and Wenger, 1991), commenting and advising on screen play. The support of play with an "expert gamer" was considered a necessary condition, given not only the potential inexperience of participants but also the short time available to them for developing procedural mastery. Indeed, Aarseth (2003) denominates the earliest phase of playing as the "explorative stage," quite distinct from the understanding of games derived from total completion, repeated play, or expert play. A second advantage that collaborative play with an expert gamer offered the researchers was the access it gave to any discussions around play as it was activated and experienced.

FINDINGS

As already noted, eleven of the participants identified themselves as having no game experience or no interest in the medium. Amongst the nine remaining game-playing participants, there proved to be a small range of game preferences and experience. The sampling technique did determine that a key means of identifying participants who played games was to approach the visible communities attached to online gaming. Therefore, a number of participants almost exclusively possessed experience with MMOGs and MMORPGs. Irrespective of the different levels of engagement with games, participants who played games commonly expressed a belief that they felt well equipped to support and monitor dependents' access to games because of their experience with/exposure to games. However, this belief did not necessarily translate into a clear distinction between players' and non-play-

ers' performance and understanding with the game selected, since all play occurred on an Xbox 360 console.

As expected, *Grand Theft Auto IV* was familiar to participants mainly for the controversy it has attracted:

> No, I've seen it very briefly, but pretty much everything I know about it, I've read or heard. . . . The ones that stick out are the sexist nature of the game, so the demoralization of women and the overall kind of criminal activities that go on within the game, they are the ones that stick out [female participant].
>
> I've not heard good things about it and it is on [partner's] list of "no, never, you are not touching that" as far as [dependent] is concerned.
>
> [Interviewer] What have you heard about it?
>
> [Female participant] That it can be quite violent if you choose to be. For me, it goes against the values I am trying to instill in my children about respecting authority and you don't kill cops and you don't run over prostitutes, you know, there's no respect for life in it, I think, is what I rebel against. . . . It's a violent game.

For participants, whether they had prior game experience or not, or whether they approached *Grand Theft Auto IV* with a declared dislike of what it promotes, all found the game relatively easy and much more enjoyable to play than first anticipated. Through the course of the structured play, all participants were able to manipulate their avatar and the environment enough to allow them to experience a sense of agency within the game. However, the video recordings did allow

us to observe signs of embarrassment in many participants on first playing, such as reddening of the neck and cheeks, nervous laughter, and self-deprecating comments about how little they would be able to achieve. Amongst game players there was also a tendency to discuss the differences between platforms (console and PC) and the impact of unfamiliarity with the controllers and interface on their performance. Generally, once sessions got under way, the game-play was accompanied by laughter that indicated enjoyment and fun on the part of the participants.

An advantage of using *Grand Theft Auto IV* for this research was the size and scope of the game and the space made available to the player to freely explore. This constitutes a different experience from that of war or horror games that often contain mazelike structures in order to contain and intensify battle or conflict, which, in turn, places pressure on players to accurately execute precise actions and quick movements. When players did progress from walking the streets of Liberty City to driving a car, they did inevitably fail to control their vehicles and crashed into street lamps, pedestrians, other vehicles, and buildings. Rather than seeing the experience of traversing space as more frustrating because of these difficulties, participants discovered that errors and/or lower abilities within a sandbox game constituted fun, as they responded to the impact and consequences of their actions with laughter (e.g., car bonnets flying off, driving with the engine on fire). In one case, a participant was in the process of narrating how objectionable it was that you could run over pedestrians in a game, when he turned a corner in his car, mounted the pavement, and squashed a pedestrian against a wall. At that moment, the participant was unable to contain his laughter, undermining his rational evaluation of the game with his bodily and nonverbal response.

Game versus Sim?

Through game-play, it was possible for investigators to witness ex-

amples of a tension felt by participants. This tension was created by the application of real-world logic to the game, which contradicted the game's narrative. It was common for participants to overlook the game-like qualities]of *Grand Theft Auto IV* because of the representational content it contains within its ode to urban life, presenting players with a city as well as a game:

> Your landscape is realistic, you're dealing with human people, you've got real cars, it's the stuff that we live with everyday as opposed to the ones based on fantasy which you can completely disassociate from [female participant].

Thompson (2008), in his review of *Grand Theft Auto IV*, stated that developers Rockstar are "utterly in love with the idea of the American city: the riot of decay and grandeur, the garish commercialism, the violence and beauty, the architectural delights hidden in every corner." For many participants, the underlying narrative of the game appeared ineffective in the face of the richness of the game environment. Indeed, during the mission "Ivan the Not So Terrible," one participant required assistance to get to its climctic moral dilemma as she followed the road code, driving too slowly to successfully engage in a car chase. This participant sought to avoid pedestrians and adhere to traffic signals, not realizing that the road traffic in *Grand Theft Auto IV* is designed to run more slowly than the cars driven by the avatar, so as to automatically make the player feel they are driving fast and flaunting the law. Other participants were quicker to realize that it was not the designers' intentions that players follow the road code:

> I actually felt like a bit of a twat stopping at a red light, it didn't feel right.
>
> [Interviewer] Why should you in a game?

> [Female participant] Exactly, why shouldn't you drive up a wall? It's not real.

Returning to the participant who drove carefully throughout the mission: it was necessary to help her reach her destination in the car. Having received help, with the mission, the participant then negotiated the rooftop chase successfully to reach Ivan, who was hanging off the ledge of the building. Without hesitation, she kicked the character off the building to his death. She later stated that on the street she was not so clear whether that still fell within the parameters of the game, yet the rooftop scenario was so familiar from film and television, and so removed from everyday life, that she had little hesitation in conforming to role and expectation in order to murder the character. Indeed, she was the only participant to select the option of killing Ivan. All the other participants nervously helped the character back onto the building. It was common for participants to report later that they expected to be subsequently punished by Ivan for showing kindness. For example:

> By not stepping on the guy's hands and helping him up, I was wondering whether I might jeopardise my character, later on. Whether that guy would go "ha ha ha" and push me off, or run off. So I was aware of those sorts of elements of trying to fulfil a role. . . . I suppose there was an element that you could see what happened if you went beyond your brief, that was kind of nice [male participant].

Corroborating Squire's assertion that gamers do wildly different things with the worlds available to them, participants showed a great deal of variety in their approaches to the game. Indeed, the first player to engage with the game failed to leave the apartment that constitutes the start-point and safe house for the game. As this participant wandered around his virtual cousin's apartment, his proximity to the television

prompted a pop-up menu illustrating how to operate the television. The participant subsequently watched the virtual television, in a virtual apartment, without experiencing the virtual city outside, for the full duration of his play session (an approach to play that sparked the implementation of structured play for the remainder of the sample). In doing so, however, that first participant revelled in the ironic, over-the-top nature of South Park–esque comic treatments of taboo and culturally sensitive topics (e.g., reinterpretation of American history). Indeed, many of the participants recognised the irony and social satire operating within the game more generally:

> I found it quite funny, but I mean everything is just so over-the-top, so how can you possibly take it so seriously? [female participant]

Participants discovered the joys of driving a range of vehicles (sometimes recklessly), with one participant trying motorcycles, a limousine, a construction truck, and a fire engine, as well as failing in attempts to acquire boats and planes. Some participants also sought to explore the depth of the environment, trying doors and building entrances, seeking out entertainment and food establishments, surfing the net in a cybercafé, and playing pool and arcade games in bars. While one participant found herself unintentionally holding a rifle (from pressing the wrong button), and enjoying the reaction and panic it caused on the city streets (people fleeing, abandoned cars causing traffic jams), on the whole participants were rarely engaged in violent encounters. Participants were often the victims rather than the perpetrators of violence, if they did experience it. Unsuccessful attempts to steal a vehicle in a gang area, or pursuit by police as the result of committing a crime (e.g., carjacking in front of police or failing to stop at a tollbooth), often resulted in a participant's avatar getting killed. In this way, participants experienced the presence of the law and saw how it was not possible to "do anything" without consequence, as they had first believed.

With the exception of a few participants who opted to complete further missions during their unguided section of the play session, they did not brandish guns, or use them to kill innocent people unconnected to the internal criminal underworld. Participants learnt that within meaningful engagement with the game, violence is contextualised and players are presented with choices in which either avoidance or resistance is possible:

> What I haven't spotted until now . . . the only other people you deliberately set out to kill are other criminals [male participant].

> Good moral choices actually accrue advantages, which is interesting, as I would have assumed that the opposite would have been true [male participant].

The play experience illustrated for participants a generational divide in terms of the demands of contemporary media forms and the levels of literacy required to engage with interactive games. This was often posited as a positive outcome of the experience, as it demonstrated to all participants that games not only are different from what they had believed, but also require different levels of understanding and engagement in their activation by players:

> I think we underestimate the level of awareness that people have when they are gaming in these environments. Even really, really violent ones. They do pick up on subtle ironies [female participant].

> Because it is a multi-layered, multi-path approach (a movie has a beginning and an end, there's one path through it), obviously there are many different paths through it. You could, I suppose, play it and not come across any violence . . . quite

conceivably [male participant].

Classified R18

Participants were asked for their opinions as to why *Grand Theft Auto IV* had received an R18 classification. Participants attributed their uncertainty about the reasons for the classification to a lack of awareness of how the assessment behind classification operates (this was revealed also in the pre-game interviews), rather than a failure to interpret the game text and its themes. Given the general positivity of participants' response to the game and the lower levels of violence they experienced compared with what they had anticipated, one participant speculated that the moral reasoning required by the game was perhaps too complex for younger players:

> Well, I can certainly see how the scenario where you have a choice between where you help someone, there's a moral judgment where the censors could easily decide it's beyond or not suitable for people under 18 to be contemplating. . . . That would seem to be the basis of it, rather than because it's a splatter as such, you know [male participant].

However, the opposite view was also presented:

> It was set in a narrative that was testing our moral boundaries, I like that. . . . I don't think kids need to be protected from that part of the game. I don't think parents would be concerned with those moral tests that the characters go through [male participant].

In general, experience of the game served to confound and confuse participants, as it presented a much more tempered and reasonable experience than they had anticipated.

CONCLUSION

I wish I had done this ten years ago [female participant].

The experience of playing *Grand Theft Auto IV* did not confirm or surpass participants' negative expectations of the game as being a highly violent, sexually explicit, and verbally abusive experience. Instead, playing prompted a radical positive reevaluation of the text and what constitutes an R18-classified game for all participants (gamers and nongamers). Experience prompted parents to acknowledge the sophistication of the game as a potential reason for its R18 classification, as the participants discovered how one needs to be able to comprehend the irony, satire, and intertextual references employed by the designers.

Our recommendation to the OFLC sought to promote the need to give further thought to the ways government might go about better educating the public and supporting parents in learning about digital games. Many of the structures of the digital immigrant world (e.g., classification) are often incompatible with the needs and demands of young people. It could be argued that one solution might be to seek change by engaging directly with the micropolitics of the home. Subtler, less disruptive approaches could arise from alerting individuals to the processes and practices surrounding play within the home. This would mean involving the home in a reconfiguration of the "formality-informality span," addressing the varying "extent and strictness of the social rituals which bind the behaviour of people" in their dealings with technology and each other (Misztal, 2000). Despite the disconnects, frictions, and clashes that are especially apparent in the existing concerns regarding games, parents remain well placed to better support their young players in developing forms of "critical" digital literacy, that is, "cultivat[ing] the habit of uncovering and critiquing both [players'] own constructed and contingent experiences and resulting worldviews, particularly those that influence society's relation[s]

with technology" (Duffelmeyer, 2001).

In using play, this research served to counteract the effects of a research culture that has produced a society that has "learnt to become 're-searchable subjects' and to 'perform' being a citizen by expressing what they see as appropriate opinions" (Buckingham and Braggs, 2004). Media research has shown us that participants will not necessarily wish to construct themselves as possessing attitudes and beliefs that differ from media-reinforced social standards. Discussing the media is itself a form of social action that allows people to define themselves and negotiate their relationship with others. This demanded the use of play in order to extract a different kind of performance from participants in which attitudes towards game content could be expressed more spontaneously. In asking participants to play games, the research sought to facilitate the construction of a more layered appreciation of game content, activity, and intent.

BIBLIOGRAPHY

Aarseth, E. (2"Playing Research: Methodological Approaches to Game Analysis." In *Proceedings of the Digital Arts and Culture Conference, [page numbers?]*, Melbourne, Australia, 2003.

Aarseth, E. "I Fought the Law: Transgressive Play and the Implied Player." In *Situated Play: Proceedings of DiGRA 2007*, edited by B. Akira, Tokyo, 2007:130-133.

Buckingham, D., and S. Bragg. *Young People, Sex and the Media: The Facts of Life?* New York: Palgrave, 2004.

Burn, A., and D. Parker. "Making Your Mark: Digital Inscription, Animation and a New Visual Semiotic." *Education, Communication & Information* 1, no 2, 2001:155–79.

Cicourel, A. V. *Method and Measurement in Sociology*. New York: Free Press, 1964.

Dovey, J., and H. Kennedy. *Game Cultures: Computer Games as New Media.* Maidenheadd, UK: Open University Press, 2006.

Drake, R. A., and L. R. Myers. "Visual Attention, Emotion, and Action Tendency: Feeling Active or Passive." *Cognition and Emotion* 20, no. 5, 2006: 608–22.

Duffelmeyer, B. "Using Digital Technology to Augment a Critical Literacy Approach to First-Year Composition." In *Education and Technology: Critical and Reflective Practices,* edited by R. Muffoletto. Creskill, NJ: Hampton Press, 2001.

Gee, J. P. *What Video Games Have to Teach Us about Learning and Literacy*. New York: Palgrave Macmillan, 2003.

Green, B., J.-A. Ried, and C. Bigum. "Teaching the Nintendo Generation." In *Wired Up: The Electronic Media*, ed. S. Howard. London: UCL Press, 1998.

Grodal, T. "Stories for Eye, Ear, and Muscles: Video Games, Media, and Embodied Experience." In *The Video Game Theory Reader,* edited by M. J. P. Wolf and B. Perron. New York: Routledge, 2003.

Gubrium, J. F., and J. A. Holstein, eds. *Postmodern Interviewing*. London: Sage, 2003.

Heckathorn, D. D. "Respondent Driven Sampling: A New Approach to the Study of HiddenPopulations." *Social Problems* 44, no. 2, 1997:174–99.

Hunicke, R., M. LeBlanc, and R. Zubek. "MDA: A Formal Approach to Game Design and Game Research." In *Proceedings of the AAAI Workshop on Challenges in Game A.I.*, Menlo Park, CA: AAAI Press, 2004.

Kirkpatrick, G. "Controller, Hand, Screen: Aesthetic Form in the Computer Game." *Game and Culture* 4, no. 2, 2009: 127–43.

Lave, J., and E. Wenger. *Situated Learning: Legitimate Peripheral Participation.* Cambridge, UK: Cambridge University Press, 1991.

Misztal, B. A. *Informality: Social Theory and Contemporary Practice.* London: Routledge, 2000.

Niedenthal, S. "What We Talk About When We Talk About Game Aesthetics." In *Breaking New Ground: Innovation in Games, Play,*

Practice and Theory, Proceedings of DiGRA 2009. http://www.digra.org/dl/db/09287.17350.pdf.

Office of Film and Literature Classification. *Public Perceptions of a Violent Videogame: X-Men Origins: Wolverine*. Wellington, NZ: OFLC, 2009.

Oliver, M., and C. Pelletier. "The Things We Learned on Liberty Island: Designing Games to Help People Become Competent Game Players." In *Changing Views: Worlds in Play, Proceedings of DiGRA 2005.* http://www.digra.org/dl/db/06276.22378.pdf

Prensky, M. *Digital Game–Based Learning*. New York: McGraw Hill, 2001.

Putnam, R. *Bowling Alone: The Collapse and Revival of American Community.* New York: Simon & Schuster, 2000.

Rockstar North *Grand Theft Auto IV*. [Xbox 360], Rockstar Games, 2008.

Thompson, C. "*Grand Theft Auto IV* Delivers Deft Satire of Street Life." *Wired,* 2008 http://www.wired.com/gaming/gamingreviews/commentary/games/2008/05/gamesfrontiers_0502. Accessed April 2010.

Turkle, S. *The Second Self: Computers and the Human Spirit.* New York: Simon & Schuster, 1984.

Zagal, J. P. "Ethically Notable Videogames: Moral Dilemmas and Gameplay." In *Breaking NewGround: Innovation in Games, Play, Practice and Theory, Proceedings of DiGRA 2009.* http://www.digra.org/dl/db/ 09287.13336.pdf.

Endnotes

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